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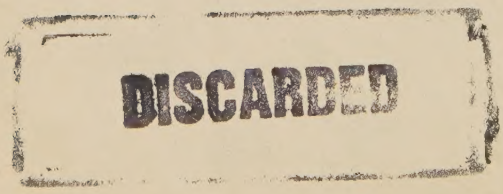

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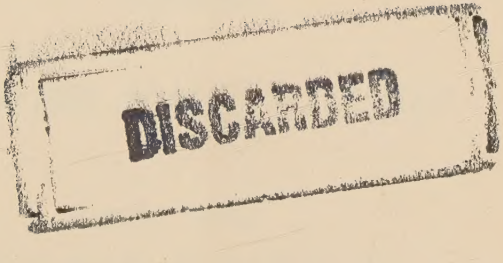

HOW TO STUDY ARCHITECTURE

BY

CHARLES H. CAFFIN

Author of "How to Study Pictures," "The Story of French Painting," "The Story of Dutch Painting," "The Story of Spanish Painting," "Appreciations of the Drama," "Art for Life's Sake," etc.

AN ATTEMPT TO TRACE THE EVOLUTION OF ARCHITECTURE AS THE PRODUCT AND EXPRESSION OF SUCCESSIVE PHASES OF CIVILISATION

WITH ILLUSTRATIONS

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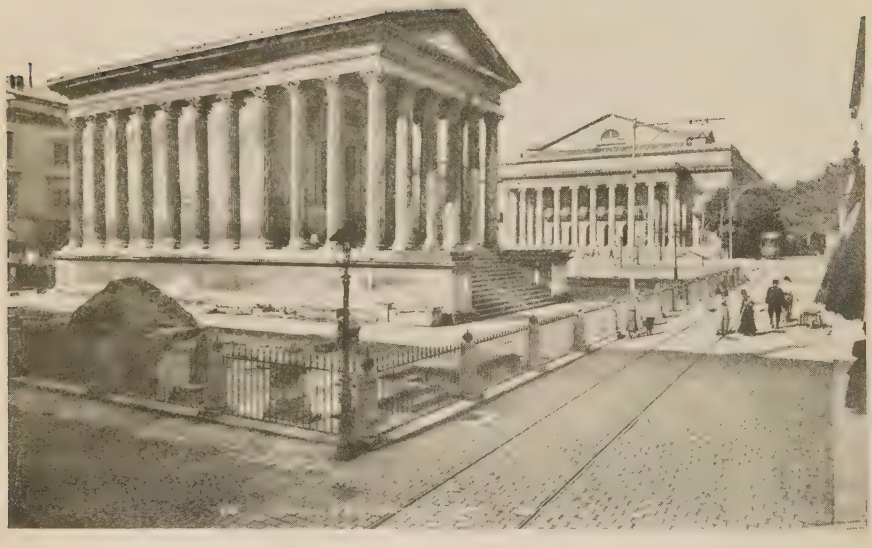
ACKNOWLEDGMENT

The author gratefully acknowledges the critical assistance given to him on certain points by Professor William H. Goodyear, W. Harmon Beers and William Warfield; and his indebtedness to Caroline Caffin for compiling the index and to Irving Heyl for several architectural drawings. For some of the illustrations he has put himself under obligations to the following publications, through the courtesy of the Librarian of the Metropolitan Museum of Art—"Histoire de l'Art," by Perrot et Chipiez; "Assyrian Sculptures," by Rev. Archibald Paterson; "Monuments Modernes de la Perse," by Pascal Coste; "Ruins of the Palace of Diocletian at Spalato" by R. Adams, and "The Annual of the British School at Athens."

Courtesy A. S. Barnes & Co. from "A History of Art," by William H. Goodyear

CONJECTURED RESTORATION OF THE FORUM ROMANUM

LOOKING N. E. TO THE CAPITOL. ON LEFT, TEMPLE OF CASTOR AND POLLUX AND THE BASILICA JULIA. RIGHT, THE CURIA. AT THE END, TEMPLE OF VESPASIAN



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Entablature Broken Round Columns. Note Decorative Use of Lettering

PANTHEON, ROME

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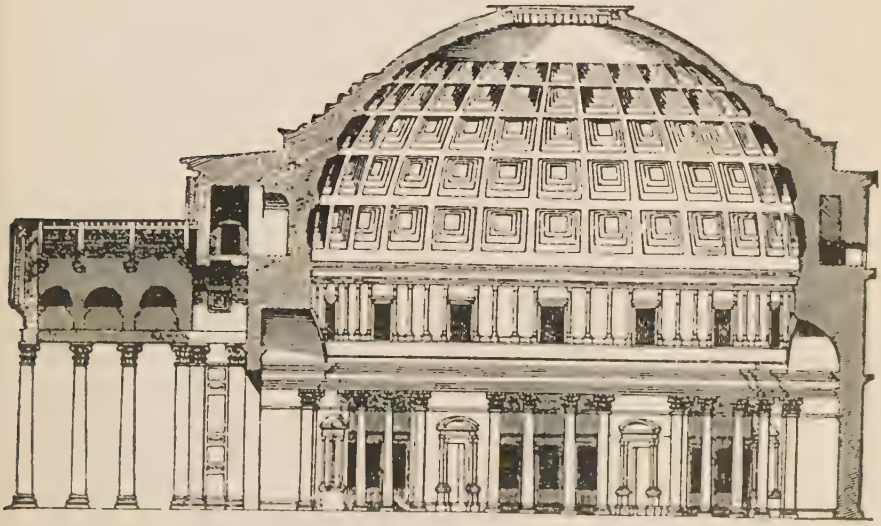

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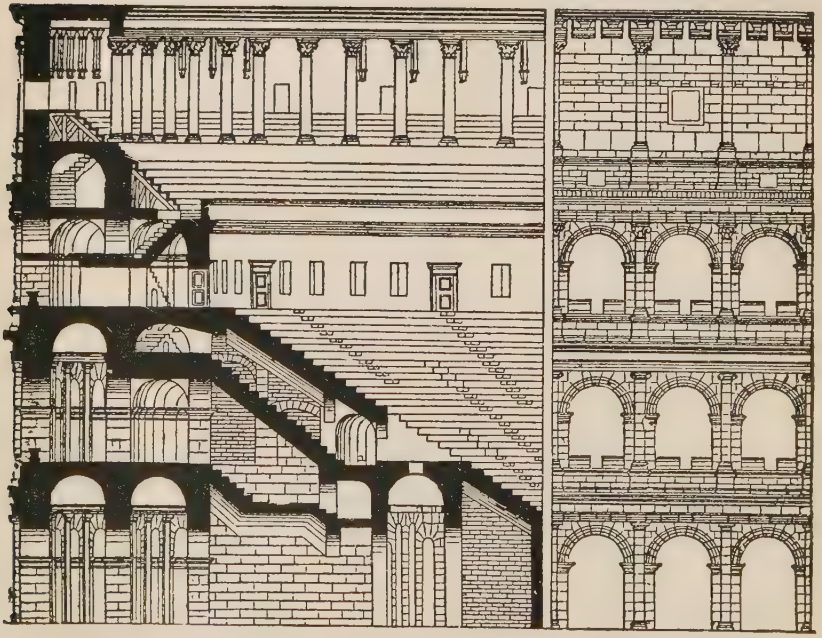

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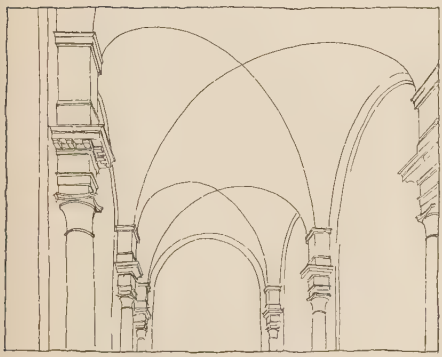

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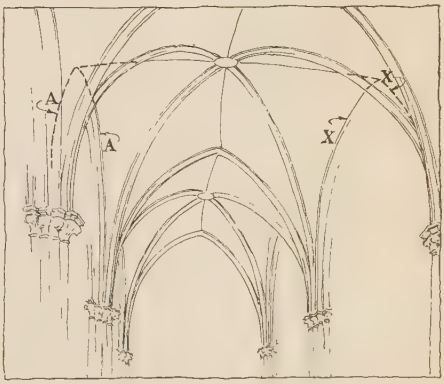

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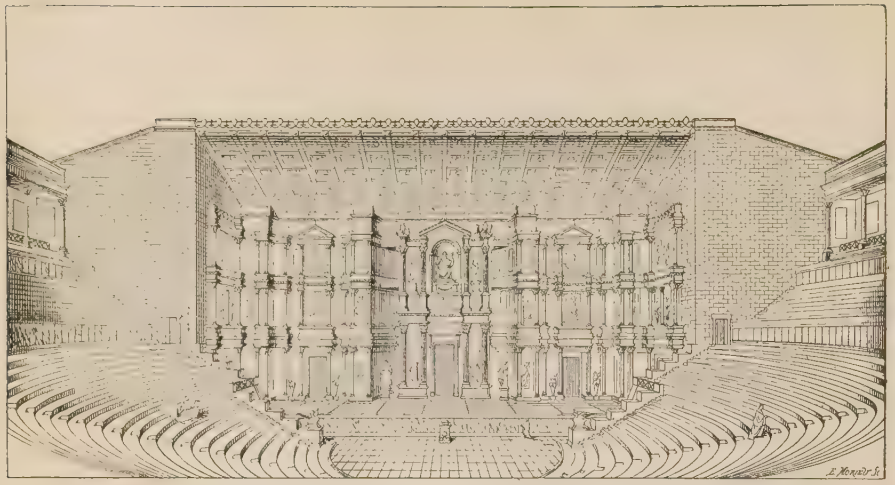
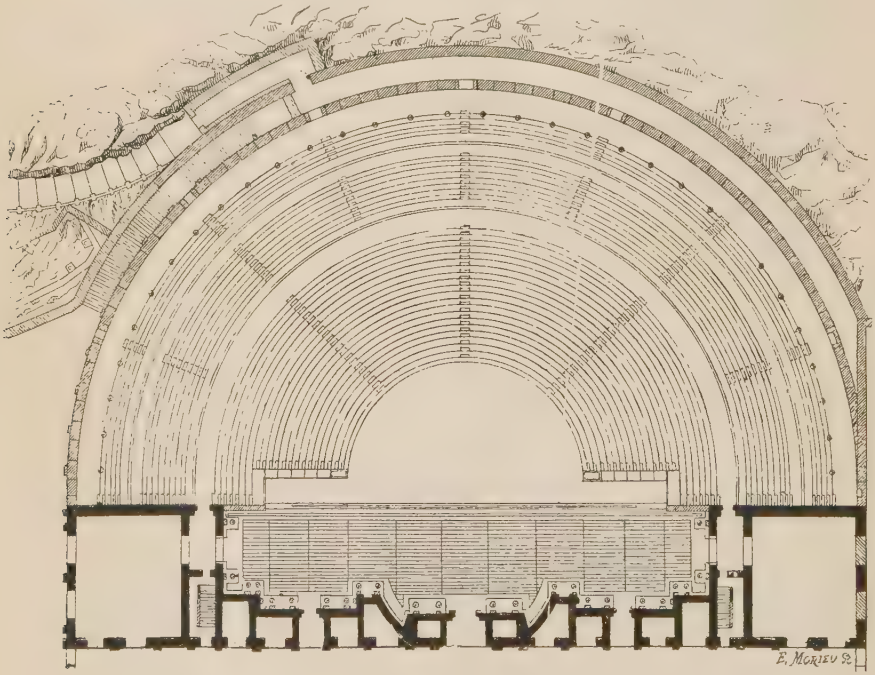


THEATRE OF ORANGE, FRANCE

CONJECTURED RESTORATION. NOTE RAISED STAGE, ARCHITECTURAL SCENE AND CEILING ROOF, ORCHESTRA RESERVED FOR MAGISTRATES AND NOTABLES



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BOOK I

HOW TO STUDY ARCHITECTURE

CHAPTER I

PRELIMINARY CONSIDERATIONS

Architecture, Sculpture, and Painting share the distinctive title of the Fine Arts, or, as the Italians and French more fitly call them, the Beautiful Arts; the arts, that is to say, of beautiful design. They are known by their beauty.

By their beauty they appeal to the eye and through the eye to the mind, stirring in us emotions or feelings of pleasure—a higher kind of pleasure than that which is derived solely from the gratification of the senses—the kind which is distinguished as æsthetic.

The term æsthetic is derived from a Greek word, meaning perception. Originally it described the act of perceiving "objects" by means of the senses—"objects" meaning anything that can be perceived through the senses. But the term æsthetic has come to have another meaning, especially in respect to sense-perceptions derived from seeing and hearing. It means that the perception gives us pleasure, because it stirs in us a sense of beauty. It may do so without any conscious activity on the part of our mind. We may be absorbed in the delight of the sensation; or it may appeal to our mind—to our memory or imagination—in such a way as to set us

thinking and feeling not only about the immediate "object" but also about something which our mind associates with it.

For example: by simple sense-perception we discover that one tree is taller than another, or that one tree is an elm, another a silver birch. Our perception may stop there; but not if we are in a mood to contemplate. Then the perception that one tree is taller than the other may be followed by the feeling that the taller tree gives us more satisfaction. It may seem to us to be a better proportioned tree: its parts are more pleasingly related to the whole mass; or it may seem to be in a fitter relation to the spot it occupies and to the other "objects" near it. Again, having ascertained by pure sense-impression that one tree is an elm and the other a silver birch, we may find ourselves thinking about the *qualities* of difference presented by the two trees. With what splendid assurance the elm trunk rears up! How majestically the branches radiate from it and bear their glorious masses of abundant foliage! On the other hand, how dainty are the stems and branches of the silver birch, how delicately graceful the sprays of tiny leaves! "How sensitive!" perhaps we say. For to our imagination the slender tree may seem to be endowed with senses that respond to every movement of the air, to every glancing of the sunlight.

In all these cases we have gone beyond mere sense-perception. We are no longer interested only in the "object." Our interest has become *subjective*. We are interested in the *subject* not the object of the verb, to perceive—the subject *who* perceives, in this case, ourself; how the thing affects oneself; how it stirs in one a sense of beauty. By this time our thoughts may have been

withdrawn from the concrete object and have passed on to "abstract" ideas, suggested by the object. It is grandeur of growth, as embodied in the elm, fragile tenderness, as expressed in the birch, that absorb our thought; and the wonder also how qualities so different can survive the rude shocks of nature, and find, each its special function in the scheme of nature's beauty.

In thus feeling external objects through our own experience of life and our own sense of beauty, we are employing the sense-perception that is specially called *æsthetic.* And it is in the degree to which objects of architecture, sculpture, or painting have the capacity of stimulating this *æsthetic appreciation* that they properly belong in the company of the Fine Arts.

Architecture is the science and art of building structures that, while in most cases they serve a useful purpose, are in all cases designed and built with a view to beauty. Their motive is beauty as well as utility.

In certain instances, as, for example, the triumphal arch, the motive may seem to have been solely one of beauty. On the other hand, when we recall that the arch was erected as a memorial to some great man or some great exploit—the Arch of Titus, for example, commemorating this general's capture of Jerusalem—the imposing dignity of the structure, by compelling attention and exciting admiration, would actually serve the purpose for which it was erected.

Indeed, the distinction which people are apt to draw between the *useful* and the *beautiful* is not necessarily so sharp as is supposed and is largely founded upon ignorance or a mistaken attitude toward life. The tendency to be satisfied with the utility of a thing and to

regard beauty as a fad, impractical and wasteful, shows that, although our civilisation may have progressed in some respects, it has fallen back in others. For there is nothing more surely certain in the history of human progress, than that, while primitive man had to exercise his ingenuity in providing for the necessities of life and in the making of tools, implements, utensils, and so forth to achieve his needs, he was not satisfied that his work should be merely useful. He had a mind to make it pleasing in shape and by means of ornament. And this attention to beauty grew as men grew in civilisation, becoming most conspicuous as their civilisation reached its highest point; and continued through the ages, until machinery began to replace the individual craftsman.

For the individual craftsman, responsible for making a thing from start to finish, must, if he is worth a hill of beans, take a personal pride in making it as well as he can. As the Bible relates of the Supreme Creator, "And God saw everything that he had made and, behold, it was very good." And the craftsman, so long as he is free to create out of his own knowledge and his own feeling, must be able to feel this, because there is an instinct in him, an imperative need of his own nature, that he shall be proud of his work. It is a wonderful fact of human nature that when it works freely, putting forth all its capacities, it is prompted by this instinct, not only to make useful things but also to make them well and as beautiful as may be.

But gradually machinery took away the workman's control of his work. He ceased to design, lay out, and carry through all the details of his work to a finish. He has come to be intrusted with only a part of the opera-

tion, and that is performed under the control of a machine that turns out the work with soulless uniformity. The craftsman has degenerated into a repeater of partial processes; he has become the servant of a machine; a cog in a vast mechanical system. And, with the development of high power machines the output of production has been increased, until *quantity* rather than quality has tended to become the ambition of the system.

It has followed as a logical result of this taking away from millions of men and women the privilege of being individual craftsmen, creators of their own handiwork, that they have grown indifferent to the quality of the work turned out; taste, which means the ability to discriminate between qualities, has diminished and a general indifference to the element of beauty has ensued.

Of all the Fine Arts, Architecture is closest to the life of man. It has been developed out of the primitive necessity of providing shelter from the elements and protection against the assaults of all kinds of aggressors. And chief among the aggressors against which primitive man sought to defend himself were the mysterious forces of nature which his imagination pictured as evil spirits. To ward off these and to enlist the support of kindly spirits represented a necessity of life that developed through fetish worship into some positive conception of religion. This need was embodied in structures, which, originating in the selection or erection of a single stone, gradually became composed of an aggregation of stones variously disposed, in heaps, in geometric groups of single stones, or in the placing of stones horizontally upon two or more vertical supporting stones.

In these crude devices to mark the burial places of

dead heroes and to provide for the necessities of religion, primitive man used the stones as he found them, with a preference for those of enormous size, to ensure permanency. Meanwhile, in the huts that he erected for the living, it is reasonable to suppose that, when available, the more perishable material of timber was employed. And here, again, he would use at first the smaller limbs, planting them in the ground in a circle or square and drawing them together at the top, so that they took the shape of a heap of stones; and covering them with skins, so that they became the prototype of the tent. Then gradually he would employ stouter timbers, planting them upright and keeping them in place at the top with horizontal timbers. On these would be laid transverse beams to form a roof; the spaces between the beams, as between the uprights of the walls, being filled in with wattles of twigs or reeds and rendered still more impervious to weather by a coating of clay or mud.

The efforts of primitive builders, it is true, are rather of archæological than of architectural significance, yet they have this much to do with architecture, that in them are to be discovered the rudiments of the art. For by the time that man had superimposed a stone horizontally upon two vertical ones, he had hit upon the principle of construction, now variously styled "post and lintel" or "post and beam" or "trabeated," that is to say, "beam" construction. The embryo was conceived that in the fulness of time would be developed into the trabeated design of the Egyptian temple and the column-and-entablature design of Classic architecture. From the colossal, monolithic form, still preserved, for example, in Stonehenge, there is a direct progression to the highly organised perfection of the Parthenon.

It is this fact that makes the study of architecture so vitally interesting. Its evolution has proceeded, stage by stage, with the evolution of civilisation. Having its roots in necessity, it has expressed the phases of civilisation more directly and intimately than have the other Fine Arts; while the comparative durability of the materials in which it has been embodied has caused more of its records to survive. Even out of the fragments of architecture it is possible for the imagination to visualise epochs of civilisation long since buried in the past; while the memorials that have been preserved in comparative integrity stand out through the misty pages of history as object lessons of distinct illumination.

Accordingly, one purpose of this book represents an attempt to study the evolution of architecture in relation to the phases of civilisation that it immediately embodied; to find in the monuments of architecture so many "sermons in stone"—discourses upon the character, conditions of life, the methods and the ideals of the men who reared and shaped them.

And this involves the second purpose, that we shall try to study architecture as it actually evolved in practice. Remembering that it originated in the need of making provision for certain specific purposes, in a word, that its motive primarily was practical, moreover, that from the first it has been the product of invention, we will try to study it in relation to man's gradual mastery of material and the processes of building. We will regard architecture in its fundamental significance as the science and art of building; tracing, as far as is possible, the stages by which man has met the problems imposed upon him by the purpose of the structure and by the

conditions of the material available; how he gradually surmounted the difficulties of building, step by step improving upon his devices and processes and thereby creating new principles of construction, and, further, how the practical operations of one race and period were carried on, modified, or developed by other races, under different conditions and in response to differences of needs and ideals.

And, while thus studying architecture as the gradual solution of practical problems of construction we will also keep constantly in mind the stages by which as man's skill in building progressed, so also did his desire to make his structures more and more expressive of his higher consciousness of human dignity. How age after age built not only to meet the needs of living but also to embody its ideals of the present and the future life; how hand in hand with growing skill in workmanship was evolved superior achievement in artistic beauty.

Our methods of study shall follow, as far as possible, the architect's order of procedure. Given a site and the commission of erecting thereon a building for a specific purpose, the architect first concerns himself with the *plans:* the *ground plan,* and, if the building be of more than one story, the several *floor plans.* He lays out in the form of a diagram the lines that enclose the building and those that mark the divisions and subdivisions; indicating by breaks in the lines the openings of doors and windows and by isolated figures the position of columns or piers which he may be going to use for support of ceilings and roofs. The disposition of all these particulars will be determined not only by the purpose of the building, but also by the character of the site and by the

nature of the materials and method of construction that the architect purposes to employ.

Then, having acquired the habit of thinking of a building as having originated in a plan, we will follow the building as it grows up out of the plan, taking vertical form in what the architect calls the *elevation,* or, when he is speaking specifically of the outside of the building, the *façades.* Sometimes we shall study one of the diagrams, which he calls a *section,* when he imagines his building intersected by a vertical plane that cuts the structure into two parts. The one between the spectator and the cutting plane is supposed to be removed, and thus is laid bare the system of the interior construction-work.

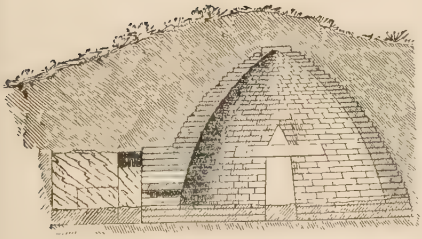
In studying the exterior of a building, therefore, we shall keep in mind the interior disposition, arising out of the planning, and acquire the habit of looking on the outside of a building as logically related to the interior. The design of a building will come to mean to us not a mere pattern of façade, arbitrarily invented, but an arrangement of vertical and horizontal features, of solid surfaces and open spaces, that has grown out of the interior conditions and proclaims them.

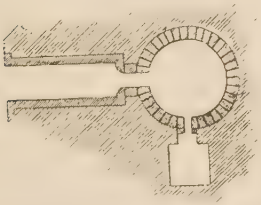
In a word, we shall regard a work of architecture as an organic growth; rooted in the plan, springing up in accordance with constructive principles; each part having its separate function, and all co-ordinated in harmonious relation to the unity of the whole. For we shall find that *unity of design* is a special element of excellence in architecture; a unity secured by the relations of *proportion, harmony and rhythm* established between the several parts and between the parts and the whole. And, since architecture is primarily an art of practical utility,

all these relations are equally determined by the principle of *fitness;* in order that each and every part may perform most efficiently its respective function in the combined purpose of the whole edifice. For this is the first and final criterion of organic composition.

STONEHENGE. SALISBURY PLAIN, ENGLAND

PRIMITIVE USE OF POST AND BEAM CONSTRUCTION. PP. 8, 16





SECTION AND PLAN OF "TREASURY OF ATREUS"

AT MYCENÆ. EXAMPLE OF "THOLOS" OR BEE-HIVE CONSTRUCTION. P. 14

TEOCALLI OR "HOUSE OF GOD"

AT GUATUSCO, COSTA RICA. P. 20

CHAPTER II

PRIMITIVE STRUCTURES

The various remains that exist of prehistoric structures, though scattered widely over different parts of the world, present a general similarity of purpose and design.

The earliest examples of domestic buildings are the lake-dwellings which have been discovered at the bottom of some of the Swiss lakes, as well as in other countries both in the Eastern and Western hemispheres. They consist of huts, rudely constructed of timber, erected on piles, sometimes in such numbers as to form a fair-sized village. Their purpose was apparently to afford security against sudden attacks of enemies, the danger of wild beasts and snakes and the malaria and fever of the swampy shores, while bringing the inhabitants nearer to their food supply and offering a crude but ready means of sanitation. The system still survives among the natives of many tropical countries and has its analogy in the boat-houses that throng the Canton River in China.

More important, however, archæologically as well as in relation to the subsequent story of building, as it gradually developed into the art of architecture are: the single huge stone, known as a *Menhir;* the *Galgal* or *Cairn* of stones piled in a heap; the *Tumulus* or *Barrow,* composed of a mound of earth and the *Cromlech.*

The single stone seems to have been regarded as an object of veneration and a fetish to ward off evil spirits. It may have been the primitive origin of the Egyptian

obelisk, the Greek *stele* and the modern tombstone. From the galgal and barrow may have been developed the pyramids of Egypt and the *truncated* pyramid which we shall find to be the foundation platforms of temples in various parts of the world while the cromlech is the prototype of temples.

Two stones were set upright and a third was placed upon the top of them. This represents in rudimentary form the so-called "post and beam" principle of temple construction. Sometimes two or four uprights were surmounted by a large flat stone. It had the appearance of a gigantic table and is called a *Dolmen.* It is conjectured that this was a form of sepulchral-chamber, in which the corpse was laid, being thus protected from the earth that was heaped around the stones into a mound. If so, the *Dolmen* is the origin of the sepulchral chamber that was embedded in the Egyptian pyramid.

Meanwhile, an intermediary stage between the highly developed *pyramids* and the primitive *dolmen* is represented in the **Altun-Obu Sepulchre,** near **Kertsch** in the Crimea. Here the mound is faced with layers of shaped stones, with which also the chamber and the passage leading to it are lined. The ceilings of both are constructed of courses of stone, each of which projects a little beyond the one beneath it, until the diminishing space is capped by a single stone. In the angle of masonry thus formed is discoverable the rudimentary beginning of the arch.

It is also convenient here to note, though it anticipates our story, the more elaborate example of this principle of roofing which is shown in the so-called **Treasury of Atreus** at **Mycenæ** in Greece. In this instance, moreover, there is a farther approximation toward the arch, since the

projections of the stones have been cut so as to present a continuous line. And these contour lines are slightly concave and meet at the top in a point, for which reason this class of tomb is known as *bee-hive.*

Another form of this method of angular roofing is seen in an **Arch at Delos,** which is part of a system of masonry that is known as *Cyclopean,* after the name of the one-eyed giant whom Ulysses and his followers encountered in Sicily, during their return from Troy. For the masonry is composed of large blocks of unshaped stone, the interstices of which are filled in with smaller stones. Here, too, the actual arch is composed of a repetition of huge, upright monoliths, supporting a series of single blocks, set up one against the other at an angle.

While, however, these primitive forms of roof construction prefigure the later development of the true arch, the student is warned in advance that they represent rather a feeling of the need of some such method of construction than any approach to a solution of the problem. For the latter, as we shall find later, consisted in discovering how to counteract the thrust of the arch; its tendency, that is, to press outward and collapse; whereas in the primitive construction this danger was evaded by embedding the roof in a mass of masonry or earth that made lateral strains impossible. The system, in fact, was more like that employed in shoring up the excavations in modern tunnelling and mining.

Meanwhile, this rude method of spanning an opening with more than one piece of stone was the primitive germ of the later development of arch, vault, and dome construction, just as the placing of a single horizontal stone on two upright ones is the prototype of columns and entablature. Thus the instinct of man, in earliest times,

reached out toward the two fundamental principles of architectural construction.

The most interesting examples of primitive structure are the so-called *Cromlechs,* of which that of **Stonehenge,** in England, is the best preserved. The unit of this and like remains is the "post and beam" formation, composed of a block of stone, supported on two uprights. In the case of Stonehenge this formation was repeated so as to form a continuous circle one hundred feet in diameter. Within this was a concentric circle, composed of smaller slabs, which enclosed a series of five separate post and beam structures on a horse-shoe plan. The latter is repeated by another series of slabs and in the centre stands the flat altar stone. Seventeen stones of the outer circle, varying from sixteen to eighteen feet in height, are still standing and in part connected by their beam slabs.

This impressive memorial stands on Salisbury Plain, eight miles north of the cathedral city of Salisbury, in the neighbourhood of which are many barrows. Was it then the temple of a burying place of mighty chieftains or was it erected in memory of some great victory in honour of the dead heroes and the nation's god? According to Geoffrey of Monmouth (A. D. 1154) who is supposed to have compiled much of his history from Celtic legends, Stonehenge is a Celtic Memorial, erected to the glory of the Celtic Zeus.

Rhys, in his "Celtic Heathendom," accepts the probability of this account and adds: "What sort of temple could have been more appropriate for the primary god of light and of the luminous heavens than a spacious open-air enclosure of a circular form like Stonehenge? Nor

do I see any objection to the old idea that Stonehenge was the original of the famous temple of Apollo in the island of the Hyperboreans, the stories about which were based in the first instance most likely on the journal of Pytheas' travels." Pytheas was a Greek navigator and astronomer of the second half of the fourth century B. C., who was a native of the Greek colony of Massilia (Marseilles) and visited the coasts of Spain, Gaul, and Britain.

Situated some twenty miles to the north of Stonehenge is the **Abury** or **Avebury** monument. Its remains comprise two circles, formed of *menhirs,* which are enclosed within a large outer circle of *monoliths,* about 1250 feet in diameter. This was further surrounded by a moat and rampart, which suggest that the structure may have served at once the purposes of a place of assembly and a stronghold.

At **Carnac,** in the old territory of Brittany, in France, are the remains of about 1000 *menhirs,* some of which reach a height of 16 feet, disposed in parallel straight rows, forming avenues nearly two miles long. They are unworked blocks of granite, set in the ground at their smaller ends. The neighbourhood also abounds with *tumuli, dolmens,* and later monuments that belong to the Polished Stone Age.

Furthermore, remains of such monuments as we have been describing are found in Scandinavia, Ireland, North Germany (in Hannover and the Baltic Provinces); also in India and Asia Minor, in Egypt, on the northwest of Africa and in the region about the Atlas Mountains. This fact, assuming that the monuments are of Celtic origin, testifies to the wide-spread migrations of this im-

portant branch of the Indo-European family which in prehistoric times swept westward in successive waves. It is known that this race also overflowed into Northern Italy and Spain. That none of their monuments of the Rough Stone and Polished Stone ages exist in these countries seems to point to the migration thither having been made at a later period.

From the time that the Celtic race finds its way into recorded history it has been recognised as pre-eminently characterised by artistic genius. The rude *menhirs,* under the combined influences of Christianity and art were in time replaced by *Stone Crosses* that in form closely approximate the thickset simplicity of the monolith, but are embellished with carved ornament. And the latter in its detail is evidently akin to the motives of decoration found upon the weapons and earthenware of the Bronze Age, combined with the interlace of lines, suggested by the example of weaving, and the use of motives derived from plant forms. These same principles of decoration were applied to the metal-work in which the Celt excelled and later to the decorated manuscripts in which he reached so high a degree of artistry. The Celtic artists in time also introduced human and animal figures into their designs, but always treated them solely as motives of decoration and never with the purpose of representing them naturally.

The prevalence of these decorative motives in ancient Asiatic and European ornament may have been due to the extended migrations of the Celts. But not necessarily; for they are equally to be found in the primitive ornament of the South Sea Islanders, North American Indians, and the inhabitants of Peru, Mexico, and Central America. Primitive man, in fact, shows a tendency to

similarity of motives and methods at corresponding stages of his evolution.

In the last three countries have been discovered some of the most remarkable remains of the Polished Stone Age and the Bronze Age. For it was to this stage—after how many centuries of development is only a matter of conjecture—that the mighty nations of the Incas, Aztecs, and others had attained, when the Spanish invaders in the sixteenth century overcame them and wiped out their civilisations.

Hitherto the most famous example has been the ruins of **Cuzco,** the imperial city of the Incas in Peru, which was captured by Pizarro; but the exploration of Professor Hiram Bingham has recently unearthed, also in Peru, **Machu Picchu,** a city of refuge, perched almost inaccessibly on the heights of the Andes. It is the belief of the explorer that this is the traditional city of Tampu Tocco, to which a highly civilised tribe retreated, when they were hard pressed by barbarian enemies and from which, legend says, they descended later to conquer Peru and found the city of Cuzco, under the leadership of "three brothers who went out from three windows." Now Tampa means a place of temporary abode and Tocco means windows; and in the principal plaza of this newly discovered city has been found a temple with three windows.

Thus it is possible that it was actually a deserted city at the time of the Spanish invasion, held in reverence as the cradle city of the Incas. Anyhow, it escaped the knowledge and the ravages of the Spaniards and retains to-day its primitive state, unmixed with the additions of any subsequent civilisation.

It occupies an immense area, only rivalled by that of Cuzco, and is constructed of stones, many of which weigh several tons, hewn into shape with stone hammers. Large portions of the mountain sides are built up with terraces, which were used for agricultural purposes and suggest an analogy with the "hanging gardens" of Babylon. No less than a hundred flights of steps connect the various parts of the city, which is divided into wards or "clan groups" by walled enclosures, enclosing houses and sometimes a central place of worship. The typical design of the houses is much like that of an Irish cabin—a ground story and a half story with gabled ends, each pierced by a small window. The wooden roofs have disappeared, but the stones, bored with a hole, to which the timbers were lashed, are still in place. In the burial caves bronze objects of fine workmanship have been discovered.

Among other noted remains of early buildings is the **Teocalli** or "House of the God" of **Guatusco** in Costa Rica. It shows a truncated pyramid of masonry, rising in steps, the top forming a platform on which the temple stands. A still more important example of this form of structure must have been the **Teocalli** of **Tenochtitlan,** the ancient name of Mexico City. Built about 1446, it was destroyed by the Spaniards and part of its site is now occupied by the Cathedral. According to accounts it comprised a truncated pyramid, measuring at the top, which was 86 feet from the ground, 325 by 250 feet. In the ascent it was necessary to pass five times round the structure by a series of terraces. On the platform were several ceremonial buildings, the terrible image of the god Huitzilopochtli, supposed to be the one that is now in the Museum of Mexico City, and the sacrificial stone.

Upon the latter were sacrificed immense numbers of human victims; report saying, though no doubt with exaggeration, that at the dedication of the temple seventy thousand were slaughtered to appease the sanguinary appetite of this hideous idol.

The exteriors of the latest remains of Central America and Mexican primitive civilisation are embellished with ornament, the motives of which exhibit curved and rectangular meanders and interlacings, derived from the example of weaving and plaiting, as well as vegetable and animal forms. Often, as in the **Casa de Monjas** in **Yucatan**, the ornament is so profuse that it obscures the character of the structure, while the forms are fantastic and extravagant and in some instances horribly grotesque. Their intention apparently was to strike awe into the spectator.

Most of what we have been studying in this chapter comes under the head of archæology rather than of art. Nevertheless, since it represents the gradual approach of civilisation toward the artistic conception, it is well worth attention.

BOOK II

PRE-CLASSIC PERIOD

CHAPTER I

EGYPTIAN CIVILISATION

The most ancient civilisation known to us is that of Egypt, and the knowledge of it is mainly derived from its architectural remains and the sculpture, painting, and inscriptions with which they are decorated. In addition, there are the records written upon papyri, the Biblical books of Exodus, and the history of Manetho, an Egyptian priest, who lived about 250 B. C. By this time Egypt had been subdued by Alexander the Great and had passed under the rule of the Ptolemies. So Manetho wrote in Greek, but only fragments of his work have survived, through quotations made from it by Eusebius, Josephus, and other historians.

It is from all these materials that scholars have endeavoured to piece together some sort of connected history of the period covered by Manetho; the difficulty being increased by the fact that the Egyptian system of chronology reckoned by dynasties and computed the time by the years of the reigning sovereign, beginning anew with each succession. Furthermore, the inscriptions omit references to any interruptions that occurred in the sequence of the dynasties; recording only the periods of Egyptian supremacy and leaving out those in which the country suffered from the domination, short or long, of foreign conquerors.

Accordingly, while Manetho names the first ruler of the First Dynasty as Menes, there is nothing but the conjecture of scholars as to the date; and the latter has been

variously estimated as from 3892 to 5650 years before Christ.

It will be a help at the outset to summarise the Dynasties under two heads: (A) those of Independent Egypt; (B) those of Subject Egypt.

A. Dynasties of Independence.

1. I–X—The Ancient Empire; Capital, Memphis in Lower Egypt. Lasted about 1500 years.
2. XI–XIII—The Middle Empire, or First Theban Monarchy; Capital, Thebes in Upper Egypt. Lasted about 900 years.
3. XIV–XVII—Hyksos Invaders occupy Lower Egypt; the Egyptian princes rule as vassal princes in Upper Egypt: from 400–500 years.
4. XVIII–XX—The New Empire or Second Theban Monarchy. The Great Epoch of Egyptian power and art. Lasted about 600 years and ended about 1000 B. C.

B. Dynasties of Subjection.

5. XXI–XXXII—The Period of Decadence under various foreign rulers; sometimes called the Saitic Period, because the first conquerors, the Libyans, made their capital at Sais. Lasted from about 1000–324 B. C.
6. XXXIII—The Ptolemaic Period of Greek rule, following the Conquest of Egypt by Alexander the Great; 324–31 B. C.
7. XXXIV—The Roman Rule: Egypt a Province of the Roman Empire; 31 B. C. to 395 A. D. At the latter date it became a part of the Eastern Roman Empire.

In 389 the emperor, Theodosius, issued an edict proclaiming that Christianity was to be recognised as the religion of Egypt. In consequence of this change all knowledge of the old form of writing gradually disappeared and the antiquities of Egypt remained a sealed book for some fourteen centuries.

The commencement of the modern interest in Egypt, as a mine of historical, archæological, and artistic lore, dates from Napoleon Bonaparte's invasion, for he took with him a body of savants to explore the topography and nature of the country and its antiquities. The results of their labours were published in 1809–13 in twenty-five volumes, illustrated with 900 engravings.

Meanwhile, in 1799, Captain Boussard, an engineer under Bonaparte, had discovered in the trenches a tablet of black basalt, inscribed with three kinds of writing, one of which was Greek. From the name of the village near which it was found it is called the *Rosetta Stone* and is now in the British Museum. Various attempts were made to decipher through the Greek the other two scripts, which were, respectively, hieroglyphic and the demotic or popular writing-form of ancient Egypt.

Finally, the clue was discovered by the French scholar, Champollion. He found there had been three kinds of characters which represented successive developments of one system of writing: that in the hieroglyphic each letter was represented by a picture-form; that in the hieratic or priestly writing, these forms were represented in a freer and more fluent way, which was further simplified in the demotic characters, used generally by the scribes. Two of these had been repeated as nearly as possible in the Greek text. It is out of this discovery that Egyp-

tology, or the science which concerns itself with the writing, language, literature, monuments, and history of ancient Egypt, is being gradually developed. Yet the subject is still involved in great uncertainty, owing to the difficulty in discovering principles of grammar, so that the translations of one scholar vary from those of others and all reach only the general sense, without assurance of accuracy.

The civilisation of a country is always largely determined by its geographical character and the latter, in the case of Egypt, is of exceptional significance. Herodotus called Egypt the "Gift of the Nile." The great river created it and has continued to preserve it. For the country comprises a narrow strip of soil varying from 4 to 16 miles in width, bordering the two sides of the stream, and extending in ancient times, as far as the second cataract, a distance of some 900 miles; approximating, that is to say, the distance from New York to Chicago or from London to Florence. It is bounded by rocky hills, and, as it reaches the Mediterranean, fans out into a delta of flat lands, the various streams being kept in place by dykes. The only thing that has saved this country from being swallowed up in the desert is the annual rise of the river, succeeding the tropical rains in the interior and the melting of the snow in the mountains of Abyssinia. This floods the lowlands and leaves behind an alluvial deposit, so richly fertile that the soil, warmed by constant sunshine, yields three harvests annually. Meanwhile, it is a remarkable fact that the records of ancient times tally with those of to-day, both showing that the amount of the rise varies but little from year to year.

Before considering how these natural features of the country affected the civilisation of its inhabitants, a fact is to be noted. At the point of time when Manetho commenced his history of the Egyptians, variously estimated from about 4000 to about 6000 years before the Christian Era, they appear as a people already possessed of a high degree of civilisation, surrounded by inferior races. An immense interval of progress separates them from the earliest conditions that we considered in the previous chapter. By what stages did they reach this footing of superiority and through what length of time; moreover, what was the origin of their race? To these questions of profound interest there is no answer forthcoming. Some recent scholars are disposed to believe that the civilisation of Egypt, as we first meet with it, had been preceded by a still more remote civilisation in Babylonia; but as yet they have not shaken the accepted view that priority in civilisation belongs to the Land of the Nile. So far as knowledge exists, civilisation appeared first in Egypt and by a wonderful combination of circumstances, continued up to historic times.

The tenacity of the civilisation of the Egyptians is a counterpart of the tenacity of character of the people, as a result primarily of their natural surroundings. Within the limits of Upper and Lower, that is to say of Southern and Northern Egypt, the Nile has no tributaries. Consequently, there was at first no urge to the inhabitants to push outward; and every inducement to cling to their own strip of territory. Moreover, since the periodic river floods were constant, there was every inducement, nay almost necessity, that they should cling to the methods by which they had learned to utilise them. Hence, *conservatism* was forced upon them and became ingrained

in their character and institutions. It was further encouraged by their isolation; for the adjoining country was desert, meagrely occupied by nomad tribes. Accordingly, that tendency of every nation to consider itself the salt of the earth and especially favoured of the gods seemed justified abundantly in their case.

Again, their dependence on the Nile early taught them the habit of noting the seasons, while the necessity of husbanding the water in reservoirs and by irrigation made them skilled in engineering and generally resourceful. And these characteristics of method and constructiveness were reflected in the social organisation.

The King was the supreme head of the whole system, descendant of the Sun-god, Ra, the individual embodiment of the nation's greatness, while beneath him the people were divided into the official class, middle class, and slaves. The first included generals, high-priests, officers, physicians, overseers, district-chiefs, judges, master-builders, scribes, and many others—officialdom being spun like a web over the life of the people. The middle class, composed of merchants, traders, ordinary priests, artisans, free working potters, carpenters, joiners, smiths, and agriculturists, enjoyed many of the privileges of the upper classes, but were not permitted to erect tombs, though their place of burial might be marked by a *stele* with inscriptions. The slaves were mere hewers of wood and drawers of water.

Title to all land, except that attached to the temples, was vested in the King and the land was worked for the State by slaves or let out at an annual rental. In connection with this subject compare the story of Joseph, especially Genesis xli.

Each administrative department had its own troops—

or, to use the modern word, *corvée*—of slaves, under an overseer who kept tally of work done and rations distributed. It was the troop, not the individual, that constituted the unit. Agriculturists ranked higher than the artisans; although the work of the latter was highly esteemed. The weavers made baskets, mats, and boats of papyrus leaves and produced linen of the finest quality as well as coarser grades. The carpenter, notwithstanding the scarcity of timber, did creditable work with the simplest kind of tools. Little variation was attempted by the potters in the forms of vessels, which were crude but often finished with fine glazes. The metal workers used gold, silver, bronze, iron, and tin; silver exceeding gold in value. Whence they procured tin is unknown, but the other metals came from the mines of Sinai and Nubia.

The processes of agriculture were of the simplest. The plough was formed of a sharpened stake, dragged by oxen; the crops were cut with sickles, and the grain was winnowed by casting it in the air, after which it was stored in large, tunnel-shaped receptacles, filled from the top by a ladder. While the Egyptians prided themselves on their immense herds of cattle, sheep, goats, pigs, and asses, the shepherds, living in the remote marshes, were "an abomination unto the Egyptians" (Genesis xlvi, 34).

Their recreations included the hunting of wild animals with dogs, while the men were armed with lasso and spear and occasionally a bow and arrows. In the marshy districts birds were brought down with a boomerang or caught in nets and traps. The people indulged in wrestling matches, gymnastics, ball-playing, quoits, and juggling, while work was performed to the accompaniments of music and singing, and music and dancing enlivened

the feasts. The instruments comprised the flute and a kind of whistle, the guitar, harp, and lyre, the last two having sometimes twenty strings.

The school, "bookhouse" or "house of instruction," was presided over by a scribe and attended by children of all classes. The curriculum included orthography, calligraphy, and the rules of etiquette, together with practice in the technical work of the department for which the children were being trained.

The uniform male garment for all classes was an apron fastened around the loins. To this in early times the King added a lion's tail and the noble a panther-skin. In the Middle Empire the apron took a pointed, triangular shape in front and became longer, while by degrees a single apron gave way to a short, opaque under-apron with a long, transparent one over it. The short apron, however, continued to be the sole garment of the priest. In time, the costume of the King included garments covering the upper part of the body, a practice which dates from the Eighteenth Dynasty, when the vigorous Queen Hatasu adopted the male costume. The uniform dress of women was a transparent robe hung from the shoulders by straps and reaching from the breasts to the ankles. In later times it was supplemented with a sleeved or sleeveless mantle.

These, and countless other particulars of daily life, are pictured with precise details, in coloured carvings and in paintings on the walls of tombs, so as to continue after death, for the benefit of the *Ka* or double, the conditions which the deceased had been accustomed to in life. This Ka was believed to be separate from the body, mind, or soul of the individual; an independent spiritual existence which, as long as it was present, ensured "protection, life,

continuance, purity, health, and joy." Hence the care with which provision was made to induce it to remain with the individual when dead. For continuance of life after death was the cardinal principle of Egyptian religion. It was the spiritualised expression of the people's intense conservatism; and the preservation of the body as a mummy and the taking of measures to ensure that the Ka would abide with it or, at least, visit it frequently, were the chief duties of the priesthood. The homes of the living, therefore, were considered of less importance than those of the dead; and, while few traces remain of dwellings or even of palaces, Egypt abounds with Tombs. These are the memorials of individuals, while the Temples embody the pride and glory of the national, collective life. Indeed, it would seem that during life the individual, except only the King, who represented the union of all, was regarded simply as a factor in the collective organisation of the community, the splendour and power of which was visualised in the Temples.

Hence the importance which was attached to size and beauty of colour in the Temple architecture. Evidence shows the Egyptians were not an intellectual race. That is to say, they were not given to speculation; nor did they carry their mathematical or scientific studies beyond the point at which they were needed for material and practical purposes. And equally devoid of abstract qualities was their imagination. It conceived of "better" in terms of "bigger," and "best" in terms of "biggest." Through all their centuries of civilisation they did not progress beyond the crude stage of finding sufficient satisfaction in constructing or possessing "the biggest thing on earth." And the biggest was constructed by sheer force of numbers of slave-workers, at an immense human

sacrifice. It has been computed that every stone in the huge Temples cost at least one life.

Accordingly, the distinguishing features of their Temple architecture are colossal height and the spreading out over vast areas, as succeeding kings added to the original building another Court or Hall to demonstrate the grandeur of his reign.

And, to repeat once more, it was the conservatism, characteristic of the race, that encouraged this repetition of motives, while at the same time establishing conventionalised forms for the details. Individuality of artistic expression was curbed by the canons of form that the priests had laid down and enforced age after age. Meanwhile, in the scenes of life with which they decorated the walls, some latitude was allowed the painters and sculptors in the direction of naturalistic representation; and it was increased when, in later times, the influence of Cretan civilisation penetrated to Egypt.

We will conclude with a brief summary of the part played by the several Dynasties in the art which is discussed in the following chapter.

It is to be noted that no inscriptions survive from the first three Dynasties; but that with the Fourth commence the records which have been recovered from the *Tombs* or *Mastabas*.

To Snofru (Greek Soris, as given by Manetho) is attributed the stepped-pyramid at Sakkarah, while the four pyramids at Gizeh are known by the names of their builders Khufu or Cheops; Khafra or Chephren, and Menkara or Mycerinus. The Sixth Dynasty closed with the reign of Queen Nitocris, who is supposed to have faced with granite the Pyramid of Menkara, in which it is believed

her funeral chamber was constructed. After her reign a period of darkness intervened during which the power of the monarchy was gradually developed, until, with the beginning of the Eleventh Dynasty, the Government was established in Thebes.

The Kings of the Middle Empire, Usertesen I, II, and III, signalised their rule by reaching out beyond the limits of Lower and Upper Egypt. They conquered Ethiopia to the south and opened up trade to the eastward with Syria, and recovered possession of the mines of Sinai. Temples were built and great public works of irrigation carried out, while changes were inaugurated in writing and education. The process of development seems to have been continued even during the Hyksos usurpation. For these Asiatic invaders, whose race and origin are unknown—the term Hyksos meaning Shepherd Kings or Bedouin Chiefs—confined their occupation to Lower Egypt, while the Egyptian Kings continued to govern Upper Egypt as vassal princes.

It was an attempted interference with Egyptian self-rule that precipitated the expulsion of the Hyksos. The latter's chief had demanded of the "Prince of the South" that he abandon the worship of Ra-Ammon for that of the Hyksos god. A refusal led to war which was brought to a successful end by Amasis or Ahmes I, first King of the Eighteenth Dynasty.

With the commencement of the New Empire Egypt entered upon an era of prosperity and power that were reflected in the grandeur of her art. It corresponded in Egyptian history to the age of Pericles in Athens; the Imperial Epoch of Rome, and the High Renaissance of the sixteenth century in Italy. Amenophis subdued the Libyans to the westward of the Delta. His successor,

Thothmes I, carried conquest as far south as the third cataract and annexed the land of Cush as a province. Having thus consolidated authority in the neighbourhood of Egypt, he invaded Palestine and Syria as far as the Euphrates. His daughter, Queen Hatasu, fitted out an expedition to the land of Punt (South Arabia) and brought back incense, wood, and animals, such as the dog-headed ape; all of which is duly recorded on the walls of her temple at Deir-el-Bahri. But the acme of power was reached by her half-brother, Thothmes III; for this monarch made fifteen expeditions, in the course of which he reduced the rising power of the Hittites and made himself master of the countries west of the Euphrates and south of Amanus. His two successors managed to hold together this great empire; but in time these foreign entanglements necessitated frequent expeditions.

By the time of the Nineteenth Dynasty the federation of the Hittites had been consolidated and Seti I advanced against them, claiming a victory which was at least not final, for they threatened his successor, Rameses II, who, however, made a treaty of peace with them and married the daughter of the Hittite king. Rameses II also invaded Palestine and afterwards penetrated as far as the Orontes. He reigned sixty-six years and it has been estimated that half the buildings in Egypt bear his cartouche; although in many cases he probably followed the practice of adding his own cartouche to buildings already existing.

It was during the reign of his son, Meneptah, that the Hebrew Exodus is supposed to have taken place; an event that indicates the weakening of the central authority, which was continued under this king's successors. Finally, during the reign of Rameses III, of the Twen-

tieth Dynasty, mercenaries were not only employed but allowed to settle in the country and during the remainder of the Rameseide Dynasty the monarchs became the tools of mercenaries and priests. Thus set in the decadence of power and art, which marked the Saitic Dynasty.

Then followed a short period of Persian domination, which was so hateful to the Egyptians that they welcomed Alexander as a liberator. He appointed as king one of his generals, Ptolemy, in whose family the succession continued through sixteen rulers of the same name. During this period Egypt became an intellectual centre, its splendid library being the nucleus of scholarship. It was by order or at least permission of Ptolemy Philadelphos, about 270 or 280 B. C., that the Hebrew scriptures were translated into Greek by seventy scholars, whence the version is known as the *Septuagint*. The Ptolemies signalised their rule by the restoration of the old temples and monuments, which had suffered from the havoc of invasions.

After the victory of Augustus Cæsar at Actium in B. C. 31 and the death of Cleopatra the following year, Egypt became, as we have already noted, a Roman province.

CHAPTER II

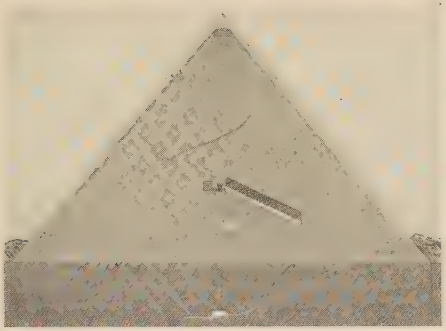
EGYPTIAN ARCHITECTURE

The remains of monumental architecture in Egypt afford a remarkable opportunity of studying the development from primitive types of structure. The earliest, which comprise the *pyramids, mastabas,* and two examples of *temples,* represent developed forms of the *tumulus* and *dolmen,* while the later temples, which began to appear in the Twelfth Dynasty, exhibit their origin in the primitive hut of the country.

THE ANCIENT EMPIRE

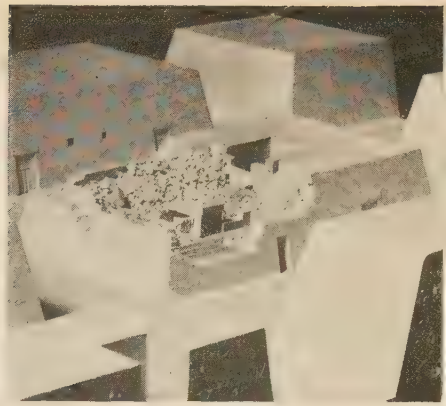
Great Sphinx.—Meanwhile among the earliest monuments, of uncertain date and origin, is the Great Sphinx of **Gizeh.** It is the prototype of the sphinxes that were afterwards used to form avenues of approach to the temples, being distinguished from the Greek type of Sphinx by the fact that the recumbent lion body is wingless and carries a male instead of female head and bust. The heads of the later sphinxes represented portraits of the reigning kings, the conception symbolised in the whole figure being the royal power. An inscription, however, upon a small temple, which was erected between the paws of the Great Sphinx in the Eighteenth Dynasty, records that it was made in honour of Harmachis, one of the forms of the Sun-god, Ra.

Hewn out of the living rock, it faces eastward, as if on guard over the pyramids and the entrance to the Nile Valley. The dimensions, when the sand was cleared from



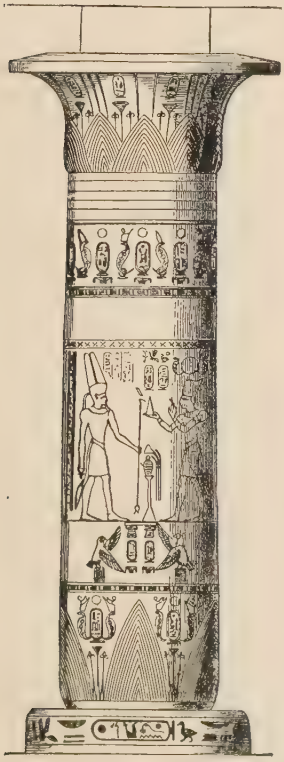
SECTION OF PYRAMID

Showing King's Chamber, Queen's Chamber and a Third One Below. P. 40



MODELS OF MASTABAS

From the Metropolitan Museum of Art, N. Y. P. 40



TYPES OF EGYPTIAN COLUMNS

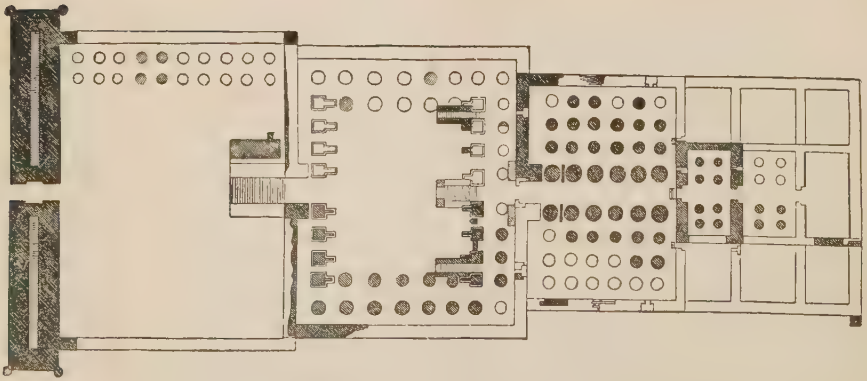
Bell or Campaniform

Hathor-Headed

Lotus Bud: Upper fro
Beni Hassan

TEMPLE-TOMB OF RAMESES II AT ABOU-SIMBEL.

P. 45



PLAN OF RAMESSEUM OR TEMPLE-TOMB OF RAMESES II

Near Deir-el-Bahri. Showing Pylons, Two Forecourts with Colonnades; Hypostyle Hall or Hall of Columns, and the Sanctuary and Ritual Chambers. Type of all Egyptian Temple Plans. P. 46

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MODEL HYPOSTYLE HALL AT KARNAK

SHOWING CONSTRUCTION AND DECORATION. P. 51

PERIPTERAL SANCTUARY

SURROUNDED ON FOUR SIDES BY COLUMNS. AT PHILÆ. P. 53

TEMPLE OF EDFOU

ENTRANCE TO HYPOSTYLE HALL. METHOD OF ADMITTING LIGHT IN PTOLEMAIC PERIOD. P. 54

EXAMPLE OF CARVED DECORATION

the body in the nineteenth century, were found to be: length, 189 feet; height, 66 feet. The face, which was originally painted red, has lost part of the nose and beard, as the result of being used as a target by the Mameluke cavalry.

Pyramids.—The Pyramids, numbering over a hundred, were the sepulchres of the kings of the first twelve Dynasties. Some, for example, the one at **Sakkarah**, attributed to Senefrou of the Third Dynasty, are of the form known as *stepped-pyramids,* their sides ascending in six bold steps; there is one at **Dashour** which slopes steeply from the ground and then breaks to a gentler slope; but the usual type is an unbroken pyramid on a square base.

Three of these, situated at **Gizeh**, are of surprising size and known by the names of their builders: **Cheops** or Khufu; **Chephren** or Khafra, and **Mycerinus** or Menkara; all of the Fourth Dynasty. The largest of these, that of **Cheops**, known as the Great Pyramid, is 482 feet high, with a side length of 764 feet. It is, in fact, 150 feet higher than St. Paul's Cathedral, 50 feet higher than St. Peter's, while it covers an area nearly three times that of the latter.

The evolution of the pyramid form has been traced from the method of burial. In prehistoric times the body was laid in a square pit which was roofed over with poles and brushwood, covered with sand. The kings of the First Dynasty lined the pit with wood. Later a wooden chamber with a beam roof was erected within the pit, descent to which was by a stairway on one side. Still later, the whole was covered by a pile of earth, held in place by dwarf walls. Then, in the Third Dynasty, the earth was replaced by a mass of brickwork with a sloping passage leading down to the mummy chamber,

and subsequently stone was employed. The completed development is represented in the pyramids of Gizeh.

They are constructed of limestone upon a foundation of levelled rock and were originally finished on the outside with massive blocks of polished stone. The entrance is on the north side by a passage, which first descends and then rises to the principal chamber, which contained the king's sarcophagus. This was lined on the east and west sides with immense stones, supporting several layers of horizontal blocks, crowned with a gable, formed of stones, which are so placed that they exert no thrust upon the stones below. A similar gable formed the ceiling of the Queen's Chamber, which is situated at a lower level, while at a still lower level is a third chamber.

The statues and sculptured reliefs, discovered in the pyramids and mastabas of the Fourth to Sixth Dynasties, exhibit not only a highly developed skill in the cutting of hard and soft stone, and ivory and wood and in beating copper but also remarkable expression of character. The minute statuette in ivory of Cheops, though the face is only about a quarter of an inch in length, is a portrait of extraordinary force, and the life-size figure of Chephren, carved in hard diorite, is equally distinguished for its serenity and power. The character of all the sculpture, even of low-reliefs of everyday scenes, is but little naturalistic, being impressed with a certain grandeur, as of something inevitable and immutable.

The earliest example of wall-painting appears at Sakkarah in the Pyramid of Onas, the last king of the Fifth Dynasty; where, amid the record of ritual observances, is depicted the grinding of the god's bones to make bread.

Mastabas.—From the methods of burial were also de-

veloped the type of the **mastabas** or tombs of the royal family, priests, and chieftains, which were erected at **Sakkarah**, near Memphis, during the Fourth, Fifth, and Sixth Dynasties. The name is derived from the Arabian term for a bench, the familiar type of which is a seat, supported upon boards that slope inward. Similarly the tomb has a flat roof and *battered,* or inward sloping, walls of masonry. It is entered usually on the east side, by a passage that descends to the Chamber of Offering, which contains, to hold the offerings, a sculptured table. Near it a vertical pit, or well, from forty to fifty feet deep, is sunk in the solid rock, communicating with the mummy chamber. Another hidden chamber, often connected with the Chamber of Offering, is known as the *Serdab,* which was intended to serve as a home for the deceased's Ka or "double." It contained a statue of the deceased and sometimes a model of his home and representations of his occupations during life. Thus, in the **Mastaba of Thy,** with a view to inducing the Ka to overlook the break that has occurred in the life of the deceased, the reliefs depict harvest operations, ship-building scenes, the arts and crafts of the period, the slaughtering of sacrificial animals and Thy himself traversing the marshes in a boat.

Sphinx Temple.—Akin to the mastaba is the earliest type of temple, such as the so-called Sphinx Temple, which although near the Great Sphinx is now attributed to Chephren. Partially excavated out of rock, it is T shaped in plan, with two rows of square piers in the longitudinal portion and one row in the transverse, supporting the stone beams of the roof. The piers are monoliths of polished granite, while the interior walls are veneered with slabs of alabaster. The whole was em-

bedded in a rectangular mass of masonry. Another temple of the Fourth or Fifth Dynasty is represented as restored in a model in the Metropolitan Museum, New York.

FIRST THEBAN MONARCHY OR MIDDLE EMPIRE

With the removal of the seat of government from Memphis to Thebes commenced the First Theban Monarchy or Middle Empire, comprising the Eleventh, Twelfth, and Thirteenth Dynasties. Abydos and Beni Hassan now became the place of tombs.

Two types of tomb distinguish this period. One, frequently found at **Abydos,** consists of a pyramidal structure with a cubical porch on one side, entered by an arched portal. The latter feature proves that the Egyptians were familiar with the principle of the arch, although they did not employ it in their monumental buildings. It appears later in the elliptical barrel-vaultings which crowned the long tunnel-like cellars that Rameses I (The Great) erected for the storage of grain. The above mentioned tombs were structural, whereas those of the second type were excavated in the vertical rock-wall that forms the west bank of the Nile; their entrance thus being toward the east. At **Beni Hassan** is a group of thirty-nine such tombs which show a marked progress in architectural design.

The front of each presents a porch, composed of columns supporting a cornice, the latter being surmounted by a row of projections or *dentils* that resemble the ends of beams. The shafts of the columns are polygonal, with eight, sixteen, or thirty-two faces, and are surmounted by a square *abacus.* It has been conjectured that these columns may be the prototype of the Doric

column and accordingly their type has been designated as *proto-Doric.* Meanwhile the columns inside the tomb exhibit a stage in the development of the *lotus* column; the motive of their design having been derived from a post around the top of which had been fastened the decoration of a cluster of lotus buds. The interior walls of these tombs are decorated with pictorial scenes, executed in red, yellow, and blue.

Obelisks.—To the Twelfth Dynasty belongs the earliest **Obelisk** still in position; that of **Usertesen I,** in the necropolis of **Memphis,** its companion having fallen. For these developed forms of the monolithic *menhir,* regarded by the Egyptians as symbols of royalty and of the Sun-god, Ra, were placed in pairs, usually before the entrance of a temple. Their design was of great refinement, the taper being regulated very carefully in proportion to the width and height. The top was crowned with a small pyramid which in certain instances, at any rate, was capped with metal. The sides of the shaft were given a slight convex curve, or *entasis,* to offset the effect of concavity which they might have produced if rectilinear, and also to relieve the rigidity of the design. It is one of the instances which prove that the Egyptians understood and practised the principle of *asymmetry,* or deviation from strictly geometrical formality—a subject we shall study more fully in Hellenic and Gothic architecture.

The two obelisks now known as **Cleopatra's Needles,** one of which is on the Thames Embankment, London, the other in Central Park, New York, were removed from Heliopolis to Alexandria by the Romans. They were originally erected by Thothmes III of the Eighteenth Dynasty, whose half-sister, Queen Hatasu, numbered

among her achievements the completion and erection of an obelisk, 100 feet high, in the short space of seven months.

From this period of the Middle Empire survive the fragments of three temples. Amid the ruins of **Bubastis** have been found examples of the type of *clustered lotus* columns, while portions of polygonal columns, discovered among the ruins of the Great Temple at Karnak, have been identified as belonging to a temple of the Twelfth Dynasty. The evidence which these remains afford of the fact that such columns were employed in actual construction as well as in rock-cut form, has been corroborated by the recent discovery of a sepulchral temple on the south side of the Temple of Deir-el-Bahri—to be mentioned later—of which it is the prototype. For the earlier was reached by steps that led up to a solid mass of masonry, which in the opinion of some authorities was crowned by a pyramid. It was surrounded by a peristyle, composed of an outer range of square piers and an inner one of octagonal columns.

It is surmised, in fact, that during the Middle Empire, which was a period of great development in the arts of peace, many of the architectural problems were worked out in temples, afterwards destroyed, to make way for the superior developments that were achieved under the Second Theban Empire.

SECOND THEBAN EMPIRE OR NEW EMPIRE

No architectural monuments mark the period of Hyksos usurpation. But the expulsion of the invaders and the restoration of the power alike of the monarchy and of the national religion produced an outburst of patriotic ardour that was fostered by rulers of exceptional great-

ness. The Eighteenth, Nineteenth, and Twentieth Dynasties are brilliant with the prowess and architectural creations that are associated with such names as Thothmes, Amenophis, Queen Hatasu, Seti and Rameses.

The **Tombs** of the New Theban Empire comprised both the structural and the excavated types. The rock-cut royal tombs are distinguished by the extent and complexity of their shafts, passages, and chambers, designed to baffle the efforts of any possible marauder, while notwithstanding the darkness which fills all the spaces, the walls are brilliantly decorated with coloured reliefs for the propitiation of the Ka. In contrast with the interior is the extreme simplicity of the entrance, of which the main features are the majestic colossal seated figures of the Monarch, which take the place of the statue within the tomb. The grandest example is the **Temple-Tomb of Rameses II** at **Abou Simbel.**

An exception to this external simplicity is the **Temple-Tomb** of **Queen Hatasu** at **Deir-el-Bahri,** which, however, presents a combination of the structural and excavated types, for projecting from the face of the rock was an extensive portico, from which steps seem to have descended to a terrace bounded by a peristyle and communicating by another flight of steps with the lower ground —an impressive architectural ensemble, designed, apparently, for ritual ceremonies.

The most magnificent examples of the purely structural Tomb are the **Ramesseum** or **Tomb of Rameses II,** near **Deir-el-Bahri,** and that of **Rameses III** at **Medinet Abou.** They may have been rivalled by the **Amenopheum** or Tomb of Amenophis III, of which, however, scarce a trace remains except the colossal seated figures, fifty-six feet high, of the King and his Queen. The former is

known as the "Vocal Memnon," a name given to it by the Greeks, after that of the son of Eos (Dawn), because of the legend, that when the statue was smitten by the rays of the rising sun, it gave forth a sound as of a broken chord.

The Ramesseum is a sepulchral temple and its plan, involving a sanctuary and ritual chambers, a hall of columns entered between pylons, and forecourts, presents the typal form of Temple plan.

Temples.—The New Theban Empire was the great age of Temple Building. It is characteristic of the conservatism of the Egyptians not only that the style of their monumental architecture was evolved from the rude primitive hut-construction but also that it preserved features of the latter, even though the necessity for them no longer existed. And so persistent was the adherence to these features, now transformed into elements of beauty, that they were continued even in the later temples, built during the period of Roman domination.

It has been suggested that the origin of the style can be discovered in the modelled and sculptured reliefs of the house of the deceased, found in the earliest rock-cut tombs. The house represents a developed stage of the still earlier hut, the character of which was determined by the scarcity of wood. Instead, therefore, of employing poles, connected by wattled twigs or reeds and covered with mud, the Egyptians fashioned the alluvial deposit into bricks, dried in the sun, which they laid in horizontal courses, each layer projecting inwards, until the walls met at the top. Gradually this beehive form of construction was modified in the better class of dwellings, by the adoption of a square plan and the use of the trunks of palm trees to form the lintel of the door and to support

a flat mud-covered roof. The representations at **Gizeh** show that bundles of reeds were used to reinforce the angles of the structure and were also laid along the top of the walls, so as to form a rolled border, corresponding to what is later called a *torus*. This, through the weight of the roof, had a tendency to be forced outward, so that it formed what was practically a concave cornice along the top of the wall. Hence the so-called *cavetto* cornice which is one of the marked distinctions of the Egyptian monumental style. Moreover, while the sun-dried bricks acquire a hardness and compactness, they are unable to sustain much pressure, so that it was necessary to make the walls thicker at the bottom than at the top. From this resulted the *batter* of the walls, which is another distinctive characteristic of the Egyptian style. Further, owing to the intense heat, windows were dispensed with and the walls in consequence were unbroken except by the entrance. To this day the houses of the poorer classes are built as of old and present the rudiments out of which was developed the style of the stone-built temples, so vastly impressive in the embodied suggestion of elemental grandeur and eternal durability.

From the outside were visible only the walls and portal of the rectangular temple enclosure. The walls sloped backward, like the glacis of a fortification. A clustered torus moulding, as of reeds bound together at intervals, so as to produce alternate hollows and swells, ran up each of the angles of the masonry and along the top of the walls, where it was surmounted by a cavetto cornice, terminating in a square moulding. A similar finish crowned the entrance door and its flanking pylons. The door, framed at the sides and top with squared blocks of stone, frankly proclaimed the post and beam principle

that also governed the interior construction of the temple.

The door was flanked by *pylons,* each a truncated pyramid with oblong base; the form, in fact, of a hut grandiosely enlarged into a decorative feature of immense impressiveness. Set into its walls were rings to hold flagstaffs, and the surface of the pylon, like that of the walls, was resplendent with coloured reliefs, extolling the prowess of the King who had erected the temple. His statue flanked the doorway, in front of which soared two obelisks, while the roadway that led to the temple was embellished with an avenue of sphinxes. These avenues were of great length, the one from Karnak to Luxor extending a mile and a half.

On the lintel over the door was the winged globe, symbol of the Sun's flight through the sky to conquer Night. Other symbolic ornaments adorned the jambs and the various cornices, while historic pictures, recording the achievements of the monarch's rule, covered the surfaces of walls and pylons. All were executed in the same way as the symbolic ornament and the pictures in honour of the deity, which covered the walls, columns, beams, and ceiling of the interior of the temple. The forms were either cut down in very low relief or enclosed by incised lines, the edges of which on the side nearer to the form were slightly rounded, in order to give a sense of modelling. In both cases the designs were filled in with the primary colours, blue, red, and yellow. Thus the decoration, derived from the method of drawing patterns in the mud of a wall while it was still damp, was inset, its higher parts being in the same plane as the wall's surface—a method distinctively mural which also maintained the avoidance of projections. This avoidance of

projecting members, except in the cornice, was a marked characteristic of the Egyptian use of the post and beam principle, as compared with the use of it by the Greeks and Romans.

The essential feature of the temple within the enclosure was the sanctuary of the deity to whom the temple was dedicated, around which were grouped chambers for the service of the priests in connection with the ritual. Entrance to this Holy of Holies and its subsidiary cells was through a *hypostyle hall,* so called because its ceiling of slabs of stone was supported upon stone beams that rested upon columns. The latter, to withstand the weight of the superincumbent mass, were of great girth and closely ranged, so that an effect as of the depths of a forest was produced, rendered more mysterious and apparently limitless by the dim and fitful light. This penetrated through *clerestory* windows, covered with pierced stonework and set in the sides of the central portion of the roof, which, supported on higher columns, rose above the side roofs, as the nave of a Gothic cathedral rises above the level of the aisles. When one recollects that the interior was completely covered with symbolic ornament and pictures, one can imagine no mode of lighting better adapted to produce a phantasy of effect, to preclude distinctness of vistas and promote a suggestion of limitless immensity, according with the idea of the eternal continuity of the soul's existence, on which the religion of the Egyptians was founded.

The only approximation in architecture to the mysterious grandeur of the hypostyle hall, leading to the sanctuary, is the nave and aisles and choir of a Gothic cathedral. But the latter presents a great difference, since it was arranged for the congregational service of

crowds of worshippers and, partly for this reason and partly because it was a product of the comparatively sunless north, it is flooded through its numerous and large stained-glass windows more abundantly with "dim religious light."

It remains to note the approach to this hall through an open court which was surrounded on two or three sides by a colonnade or peristyle, while an avenue of columns frequently led through the centre from the main entrance of the pylons to the portal of the hall.

This combination of Court, Hall, and Sanctuary with its Chambers, already present in the **Ramesseum**, formed the essential of every temple plan, even during the period of Roman occupation. But while the nucleus of the plan was organically complete, unity of effect was abandoned in actual practice owing to the additions made to the original temple by successive kings, who would contribute another hall of columns or another court and sometimes erect another temple as an annex. The most remarkable example of this gradual accretion of additional features is to be found at Karnak; a group of temples in honour of the Sun-god Ra-Ammon, the building of which extended throughout the period of the New Empire.

Temples of Karnak.—The nucleus of the scheme was the granite sanctuary and chambers erected by Usertesen I of the Twelfth Dynasty. In the Eighteenth Dynasty Thothmes I added to the west front of this a columned hall with pylon entrances, surrounding the interior wall with *Osirid* statues, seated statues of Osiris, the wise and beneficent ruler of the Second Dynasty, who after his death was honoured as the King of the Dead in the nether world. Later a third pair of pylons was built by Rameses I; and this was utilised as one of the sides

of the Great Hypostyle Hall begun by Seti I and completed by Rameses II. It communicated through another pair of immense pylons with the Great Court of Sheshonk.

In the northwest corner of the latter Seti II of the Nineteenth Dynasty erected a small temple, while, protruding into the court on the opposite side was the temple of **Ammon**, built by Rameses III of the Twentieth, who also built the adjacent temple of **Chons**, connected with the main group of buildings by an avenue of Sphinxes. It was from this temple that the long avenue of sphinxes, already mentioned, extended to the **Temple of Luxor.**

Meanwhile, during the Eighteenth Dynasty, Thothmes III had erected at some distance to the eastward of Usertesen's original sanctuary, a large hall and adjoining chambers. These are supposed to have been his palace, though it is urged to the contrary that they offered but little accommodation for the retinue of servants and officials which distinguished an oriental court, besides being gloomy as a residence. Possibly, however, Thothmes under the spell of religious feeling may have used this palace for occasional occupation, even as Philip II of Spain built a palace in connection with a monastery, a school of priests and a great church and mausoleum—the aggregate of functions represented in the Escoriál.

The climax of the architectural ensemble at **Karnak** is Seti's **Great Hypostyle Hall**, the most imposing example known of post and beam construction. It is 338 feet wide with a depth of 170. A double row of six mighty columns 70 feet high and nearly 12 in diameter support the central nave, on each side of which the flat roof is supported by 61 columns, each about 42 feet high and 9 wide. The capitals of the taller columns are of

the so-called *bell* type; those of the lower ones, *lotus bud.*

Column Types.—Reference already has been made to the *lotus-bud* type of columns found in the interior of some of the tombs at **Beni Hassan.** These represented a conventionalised design as of four buds with long stems bound around a circular post. The later columns, however, of the lotus-bud type were no longer only a decorative feature but had to support the immense weight of the beams and ceiling slabs, consequently the diameter was increased to about one sixth of the height. The capital suggests either one bud with numerous petals crowning a smooth circular shaft or a cluster of buds and stalks bound at intervals with rows of fillets; the design in both cases being more conventionalised than in the early examples.

The *bell,* or *campaniform* type is distinguished by a smooth shaft crowned with a conventionalised single blossom of the lotus, the petals of which flare or curve outward so as to resemble the shape of an inverted bell.

Another example of the flaring capital is that of the *palm* column, the fronds of which are bound by fillets to a smooth shaft. It is a type that appears in the later temples and was varied by the architects of the Ptolemaic period, who substituted for the palm other motives derived from river plants.

An exceptional form, which appears in **Temples of Isis,** as at **Denderah, Edfou,** and **Esneh,** is the so-called *Hathor-headed* column, which has a cubical capital, embellished on each side with a face of the goddess and surmounted by a miniature temple. The latter takes the place of the *impost* block which in the other types of column sustains the weight of the beam and protects the carving of the capital.

In certain instances the columns were superseded by piers with rectangular shafts, which sometimes were unadorned in their impressive simplicity, at other times ornamented with lotus flowers and stalks or heads of Hathor. In the so-called *Osirid pier* a colossal statue of the god projects from the face of the pier, being the only example of a feature added to a pier or column for purposes solely of symbolic ornament and without any structural function.

Next to Karnak in magnificence and extent is the neighbouring **Temple of Luxor.** Another important example of the period is the temple erected at **Abydos** by Seti I dedicated to Osiris and other deities. In consequence it is distinguished by seven sanctuaries, ranged side by side and roofed over with horizontal courses of stonework, each of which projects inward over the one below it, until they meet at the top, the undersides being chiselled into the form of a vault.

A few examples are found of the *peripteral* type of temple, consisting of a *cella* or sanctuary, surrounded on the four sides by columns. In one instance—the temple erected by Amenophis III at **Elephantine**—the columns are confined to the front and rear, while at the sides are square piers. These structures are small, and, in two cases, at **Philae**, are unaccompanied by a cella; which suggests that they were used as waiting places in connection with the adjoining temples.

PTOLEMAIC AND ROMAN PERIODS

During the period of political decadence the building of temples declined, but it was renewed under the rule of the Ptolemies and continued during the Roman occupa-

tion. While, notwithstanding foreign domination, the Egyptian type was in the main adhered to, an important change of detail was adopted in the manner of lighting the hypostyle hall. The light was admitted from the front, over the top of screen walls, which were erected between the columns to about half their height. A celebrated example is at **Edfou**, the most perfectly preserved temple of this period, which also conforms most closely to the old type. For in other instances there was a growing tendency to introduce novelties of detail, characterised by greater elaboration and ornateness. It is signally represented in the **Temple of Isis** on the island of **Philae**, for here the shape of the site has produced irregularities in the planning of the various buildings, which enhances the general picturesqueness of the whole group. Unfortunately, in consequence of the erection of the Assouan Dam, these temples at **Philae** are submerged for the greater part of the year.

How far the Egyptians studied orientation, or the placing of a temple with reference to the points of the compass, is uncertain. But there are grounds for supposing that in some cases they orientated the principal entrance toward the sun or a certain star, the exact position of which on some particular day would indicate to the priests the exact time of year.

Palace and Domestic Architecture.—Of palace architecture the only conjectured remains are the buildings erected in the rear of the Temple of Karnak by Thothmes III and the pavilion of Medinet Abou on the west bank of the Nile at Thebes; the unsuitability of which as royal residences has already been noted.

A clue to the laying out of a town and the character of

domestic buildings has been found at **Tel-el-Amarna** and at **Kahun,** in the Fayoum. On the latter site Petrie discovered the walls of a town which was erected for the overseers and workmen employed in the construction of the pyramid of **Illahun** (2684–2666 B. C.) and abandoned after the completion of the work. The streets ran at right angles; and the houses were built around open courts, whence the light was derived, for there were no windows giving on to the streets. The houses varied in size from the one room hut of the labourer to the group of rooms with their own court occupied by the overseer, while a still larger group in the centre of the town was the residence of the governor.

From these remains and from pictures of "soul houses," found in the tombs, it is concluded that the houses of the richer classes corresponded to a Roman villa; consisting that is to say of detached buildings built within enclosures, which were surrounded on the interior with colonnades and were laid out with groves, fishponds, and other ornamental features. The material employed in the walls and buildings was sunburnt brick which was overlayed with stucco decorated in bright colours. The walls in the case of the residences were carried up through two or three stories with windows in the upper ones and a verandah under the flat roof. The latter, constructed of timbers, supporting smaller beams, filled in with mud, was reached by a staircase in the rear. When the rooms exceeded nine feet or so in width, their ceilings were supported by columns or posts.

CHAPTER III

CHALDÆAN, ASSYRIAN, AND BABYLONIAN CIVILISATION

Rooted deep in the recesses of the past was the ancient civilisation that flourished in Mesopotamia. Some latest scholars are disposed to believe that it even preceded the civilisation of Egypt, with which it has some features in common. For this strip of territory, extending from near the Persian Gulf in the south to the mountainous country of Armenia in the north, is an alluvial plain, made and nourished by its rivers—the Tigris on the east and the Euphrates on the west. The latter is a shallow stream, except at the annual flood, when it sweeps over the low banks and innundates the flat lands. Thus the inhabitants of Mesopotamia, like the Egyptians, early learned to control the river with drains and dykes and to construct canals and systems of irrigation. And on a par with their engineering prowess became their achievements in building.

Like Egypt also, Mesopotamia came to have its upper and lower kingdoms. The former, the Biblical Padan-Aram, became associated with the history of the Assyrians; the latter, the Plain of Shinar, with that of the Chaldæans and Babylonians. It was the lower or southern part that seems to have been first occupied, by a people apparently of non-Semitic stock, whose origin is unknown. Named by different scholars Akkadians or Sumerians, they were an unwarlike race which early attained a considerable degree of civilisation. Their chief city was

Babylon, whence the country derived the name of Babylonia. It is supposed that these people invented the cuneiform system of writing, which was later employed by the Babylonians and Assyrians, while its use spread to the other nations from Persia to the Mediterranean.

This wedge-shaped script was in its origin a form of pictorial or ideographic writing and developed its peculiar character from the fact that the writing was done on tables of soft clay. Pressure was needed to make the marks and accordingly the stylus came to be formed of three plane surfaces, meeting at a point like the angle of a cubic triangle. As the system grew the ideogram from merely picturing the object was used to denote the first syllable of its name and then by degrees to denote that syllable in whatever word it might occur.

The clue to the reading of the cuneiform script was discovered in 1802 by a German, Georg Friedrich Grotefind, whose work was carried farther by Christian Lassen of Bohn. Meanwhile, the Englishman, Henry Rawlinson had mastered the secret through a study of Persian cuneiform script. Thus an immense mine of knowledge was opened up to the scholars, for the kings of Babylonia and Assyria kept most extensive records, not only of their wars and personal prowess in the chase, but also of commercial transactions, while many of them epitomised the history of past periods. For example, it is from one of these records, made by Napa-haik, the last native king of Babylonia (555–538 B. C.), that we get the earliest date of the so-called Akkadians. For he caused it to be written that, while he was restoring an ancient temple at Sippar, he found among the foundations a record of Sargon I—not to be confused with the later Assyrian king of the same name—which dated back 3200

years before its discovery. Moreover, an Assyrian scribe makes this Sargon relate of himself that he was born in secret, exposed as an infant in a basket of rushes on a river, rescued and brought up by a shepherd, chosen the leader of a band in the mountains and finally became a king. It would be interesting to know the date of this record, but presumably it was after the Jews had been carried captive to Assyria.

The prosperity of this early race and its unwarlike character invited invaders. For, it is in this particular that the fortunes of Mesopotamia differed from those of Egypt. While the latter was isolated by great deserts and its people in early times were neither disturbed from the outside nor tempted to stray beyond their borders, the deserts surrounding Mesopotamia were broken up with frequent spots of fertility. On these subsisted nomad tribes of Semitic origin, which early must have looked with covetous eyes upon the superior abundance of the river-enclosed lands. Thus the non-Semitic inhabitants became involved with Semitic peoples: Chaldæans, Elamites, and Assyrians.

Fortunately it is not necessary for our purpose to attempt the difficult task of unravelling the stages of this obscure story. A few particulars will suffice.

The Chaldæans appeared in the South and established a capital at Ur of the Chaldees, extending their sway over what was called later Babylonia. But so far from crushing the original inhabitants, they seem to have assumed toward them the attitude of protectors. They were the strong men, as it were, that kept the house armed against aggression, while the peaceful occupants

continued to pursue their industries and arts. Thus ensued that period distinguished as THE EARLY CHALDÆAN (about 2250 to 1110 B. C.) which produced those treasures of art, especially in glazed pottery, that recent exploration has been discovering.

And just as this older civilisation was respected by the warlike Chaldæans, so also it was borrowed and imitated by the warlike Assyrians who gradually gathered power in upper or northern Mesopotamia. They founded a city and called it Assur, after their national god, in whose honour they erected a temple in 1820 B. C. This is the first definite date of this people, based on the authority of King Tiglath-Pileser (about 1120–1100 B. C.), who relates that, while restoring the temple, he found the ancient record of its founding. It is significant of the general attitude of the Assyrians toward the civilisation of Babylonia that they also borrowed the latter's national god, Marduk. The first extensive records of the Assyrians are derived from the "library" of this Tiglath-Pileser, found among the ruins of Assur. They describe his wars and hunting expeditions and how he killed with his own hands ten elephants and nine hundred and twenty lions. This monarch, by the capture of Babylon, brought to a conclusion the rivalry that had existed since the fifteenth century B. C. between Assyria and the Chaldæan-Babylonian kingdom. We may date from his reign, namely about 1110 B. C. the supremacy of the ASSYRIAN EMPIRE which lasted until 606 B. C.

Meanwhile, the city of Nineveh, now marked by the mounds of Koyunjik and Nebi Yanus had been in existence as early as 1816 B. C. A palace was erected there by Shalmaneser I (1330 B. C.) and at some date unknown a

temple to Ishtar. She was the goddess of Love and War and in her voluptuous aspect corresponds to Ashtoreth or Astarte of the Syro-Phœnicians. This cult characterised her shrine at Nineveh, while in her warlike aspect she was worshipped at Arbela.

For a time the prestige of Nineveh waned, as Assur-nazar-pal (885 B. C.) and Shalmaneser II erected palaces at Nimroud, the ancient Calah. The latter monarch was the first, so far as known, to come in conflict with Israel. He conquered Ahab and exacted tribute from Jehu.

With Tiglath-Pileser III (also called Pul by the Hebrews) who carried a portion of Northern Israel into captivity (2 Kings xv), began the period of Assyria's greatest glory. The last dynasty commences with Sargon (722–705 B. C.) who built himself the famous palace at Khorsabad. He conquered Samaria and carried the whole of northern Israel into captivity, replacing them with men "from Babylon and from Cuthah and from Ava and from Hamath and from Sepharvaim" (2 Kings, xvii, 24). This allusion to Babylon is significant. It points to Sargon's policy of reducing the rival power of the city, which was destroyed by his son and successor, Sennacherib. It was the latter who "came up against all the fenced cities of Judah and took them," afterward suffering the loss of his army in the siege of Jerusalem, as chronicled in 2 Kings, xviii, xix; though this disaster is not mentioned in the cuneiform records. He revived the grandeur of Nineveh, which was added to by his son Esarhaddon (680–668 B. C.). This monarch's reign represented the high-water mark of Assyrian supremacy. Among his exploits was the conquest of Egypt, whereby he added to his titles that of "King of Kings of Lower and Upper Egypt and Ethiopia." He was also a great

builder, restoring Babylon and erecting for himself a superb palace at Nineveh, the materials for which were supplied by twenty-two subject kings.

Under his son Asurbanipal, the Sardanapalus of the Greeks (668–626 B. C.), the last of the Sargon Dynasty, Assyrian prosperity reached its culmination. Being, as he said, "endowed with attentive ears," Asurbanipal was inclined to the study of "all inscribed tablets" and caused the collecting and re-editing of the whole cuneiform literature then in existence. A great part of his "library" has been recovered from the ruins of Koyunjik and is now in the British Museum.

In the year following this monarch's death Nabopolassar (625–604 B. C.) who seems to have been the Assyrian vice-roy of Babylonia, entered into alliance with the Medes and through their help destroyed the supremacy of the Assyrians and became the first king of the New Babylonian Empire.

His son, Nebuchadnezzar, or Nebuchadrezzar, conquered Jerusalem and carried its inhabitants captive to Babylon. To him this city owed its final magnificence. Occupying both banks of the Euphrates, it was now surrounded by two fortified walls, the outer one being fifty-five miles in circumference, with a height of 340 feet and a thickness of 85. It was further protected by 250 towers and pierced with a hundred gates of brass. Numerous temples adorned the city, the grandest being that of the national god, Marduk (Merodach). Near this was the royal palace, now represented by the ruins of Al Gasr, "the Castle." Sloping down from it to the river were the terraced gardens laid out by the king for the pleasure of his Median wife, Amytis. They are better

known as the hanging gardens of Semiramis, from the Greek account that attributed various Oriental wonders to this mythical queen. Nebuchadnezzar also restored the temple of Nebo in a suburb of Babylon, now called Borsippa. This famous shrine was constructed in the form of a stepped-pyramid and from its seven terraces was called "The Temple of the Seven Spheres of Heaven and Earth." Included in Assyrian temples was frequently a tower, and the one belonging to this temple of Nebo is assumed to have been associated with the story of the "Tower of Babel" (Genesis xi).

Nebuchadnezzar was succeeded by his son, Nabonidus, whose eldest son, Belshazzar, was co-regent with him and governor of South Babylon. This is the cuneiform record, which varies from that of Daniel (Chapter v), who makes Belshazzar the son of Nebuchadnezzar and last king of Babylonia. In 538 B. C. Cyrus the Great took Babylon by storm and the country passed under the Persian rule. Darius I razed the fortified walls and Xerxes stripped the temples of their golden images and treasure. The city fell into decay, until in 300 B. C. much of it was demolished to provide material for building the neighbouring city of Seleucia. By the time of Pliny (23–72 A. D.) the once proud city was a place of desolation.

While the Assyrians and Babylonians were religious peoples, their temples were insignificant, as compared with those of the Egyptians nor have they left any tombs of architectural importance. Their religion was of an eminently practical kind, devoted to securing benefits in this world and concerned little with a future life. Thus their gods were representative of natural phenomena or

of their own pursuits: gods of the sun, moon, the heavens, earth (Bel), weather; of water and canals, the chase, war, invention of writing and literature; and unfriendly gods of pestilence and fire.

As may be seen in their sculptures, they valued the qualities of energy and physical prowess. Their kings are not represented, like those of Egypt, as of slim, svelte figure, or wrapped in monumental composure. They are giants of exaggerated muscular development, engaged in conflict with wild beasts of corresponding strength. They were mighty captains of war and in times of peace, mighty hunters and builders.

While Assyria borrowed its culture from Babylonia, the character of the two nations was very different. Babylonia was a country of merchants and agriculturists; Assyria, an organised camp. The latter's dynasties were founded by successful generals; while in Babylonia it was always a priest whom a revolution raised to the throne and the king remained to the last a priest under the control of a powerful hierarchy. The Assyrian King, on the contrary, was an autocratic general, supported in earlier times by a feudal nobility and, from the reign of Tiglath-Pileser III, by an elaborate bureaucracy. In each country there was a large body of slaves.

In Assyria education was confined to the ruling class; whereas in Babylonia every one, women as well as men, learned to read and write. Most of the Babylonian cities and temples had their libraries and the genius of the people displayed itself most characteristically in literature. Among works which have been discovered, whole or in fragments, were the "Epic of Gilgamesh," consisting of twelve books each of which recounts an adventure in the hero's career; another epic, that of the Creation,

and the "Legend of Adapa," the first man. In astronomy and astrology the Chaldæans and Babylonians from early times were adepts; observatories being attached to the temples from which reports were regularly submitted to the King. They were also skilled in mathematics and mechanics. For example, a glass lens, turned on a lathe, was discovered by Layard at Nimroud, among the remains of glass vases which bear the name of Sargon.

While the Chaldæans in time had become mingled with the Babylonians, so that the latter name was used to designate both peoples, the term Chaldæan came to be used in a special sense. The "Wisdom of the Chaldæans" continued to be recognised, and it was probably to the pure race of Chaldæans that the priests, "astrologers" and "magicians" belonged. And their distinction as wise men even survived the overthrow of Babylon. In all likelihood they were Chaldæans, those "Wise men from the East," who saw and interpreted the star and followed it to Bethlehem.

CHAPTER IV

CHALDÆAN, ASSYRIAN, AND BABYLONIAN ARCHITECTURE

Brick Construction.—In its principal features and general character of construction, the architecture of each of these three civilisations is similar, being based upon the methods that originated with the Chaldæans. These methods were the direct result of the geographic and climatic conditions of the country they inhabited. For Lower Mesopotamia, Babylonia proper, is an alluvial plain, interrupted by a single ridge of limestone hills which were sparsely covered with small trees, especially the scrub-oak. Timber and stone were scarce, while everywhere clay abounded. Accordingly, the chief material of construction was brick, shaped in wooden moulds and sun-dried. The limited amount of fuel permitted only the making of burnt bricks for special purposes: namely, the facing of the structures and the paving of the floors. And these superior bricks or tiles were frequently glazed and decorated with ornament in bright colours.

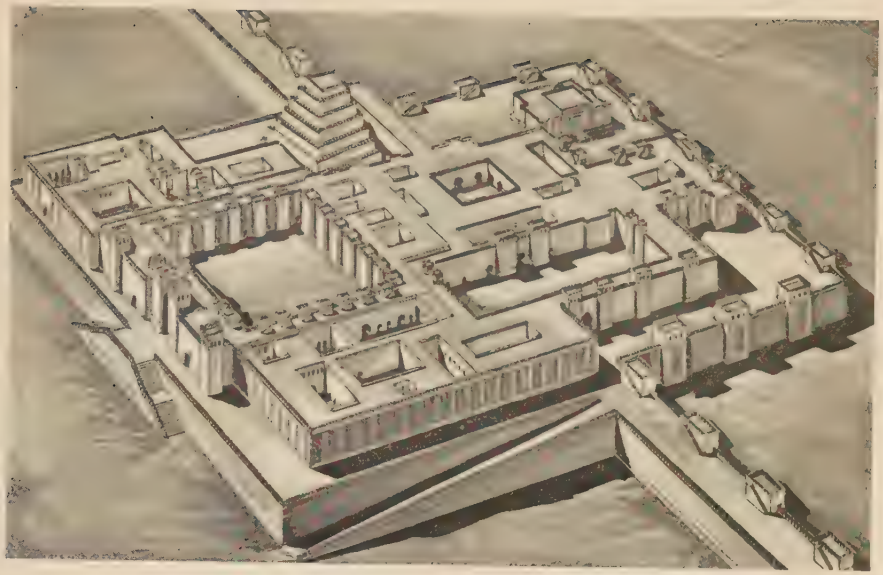
Meanwhile, in Upper Mesopotamia, Assyria proper, the ground was comparatively arid and plentifully supplied with limestone. Yet such was the habit of the Assyrians to imitate the Southern kingdom in matters of civilisation, that they also relied upon sun-dried brick for construction, and employed glazed earthenware for decoration. In time, however, they came to employ stone for facing as well as for the sculpture, which was a characteristic decorative feature of the palaces.

Platforms.—We shall see presently how the fierce heat

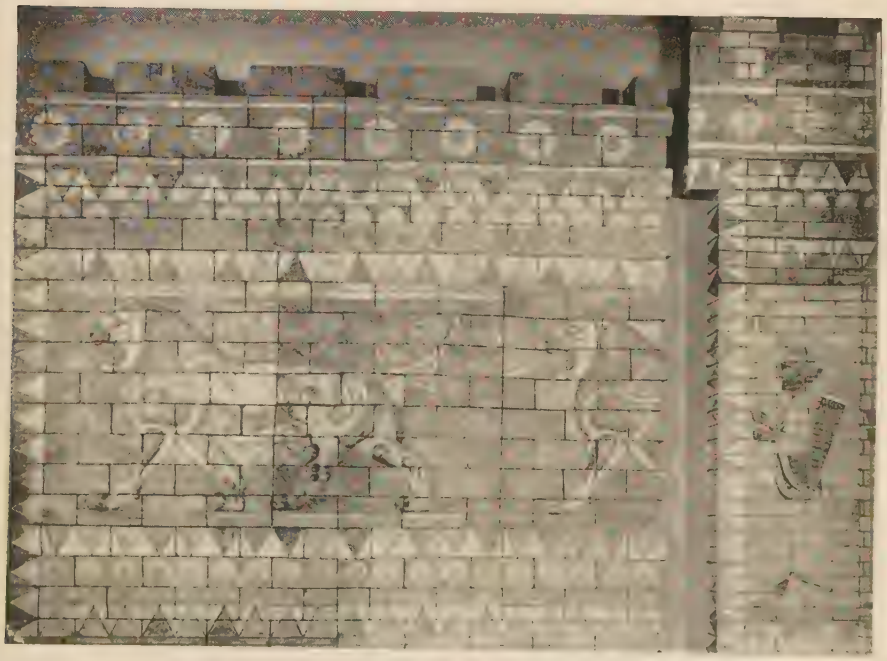
affected the principles of architectural construction, noting in advance the means taken to provide against the periodical inundations due to the torrential rains and the overflow of the Tigris. From earlier times all important buildings were erected upon platforms, constructed of sun-dried bricks and faced with fired bricks or stone, the walls having a batter, that is to say, sloping inward. Approach to the summit was either by flights of steps or an inclined roadway that paralleled the wall—technically known as a *ramp.* Intersecting these mounds or platforms was a system of arched culverts, designed, as in modern railroad embankments, to carry off the water.

In course of time, as buildings fell into decay or were replaced with newer ones by later builders, the height of the mound increased. The result is that the plain of Babylonia for 220 miles is studded with immense mounds, some of them a mile in diameter and attaining 200 feet in height, crowned with the remains of towns. Beneath these, the modern explorer, cutting down into the interior of the mound, comes upon successive stages of foundations, representing the remains of various epochs.

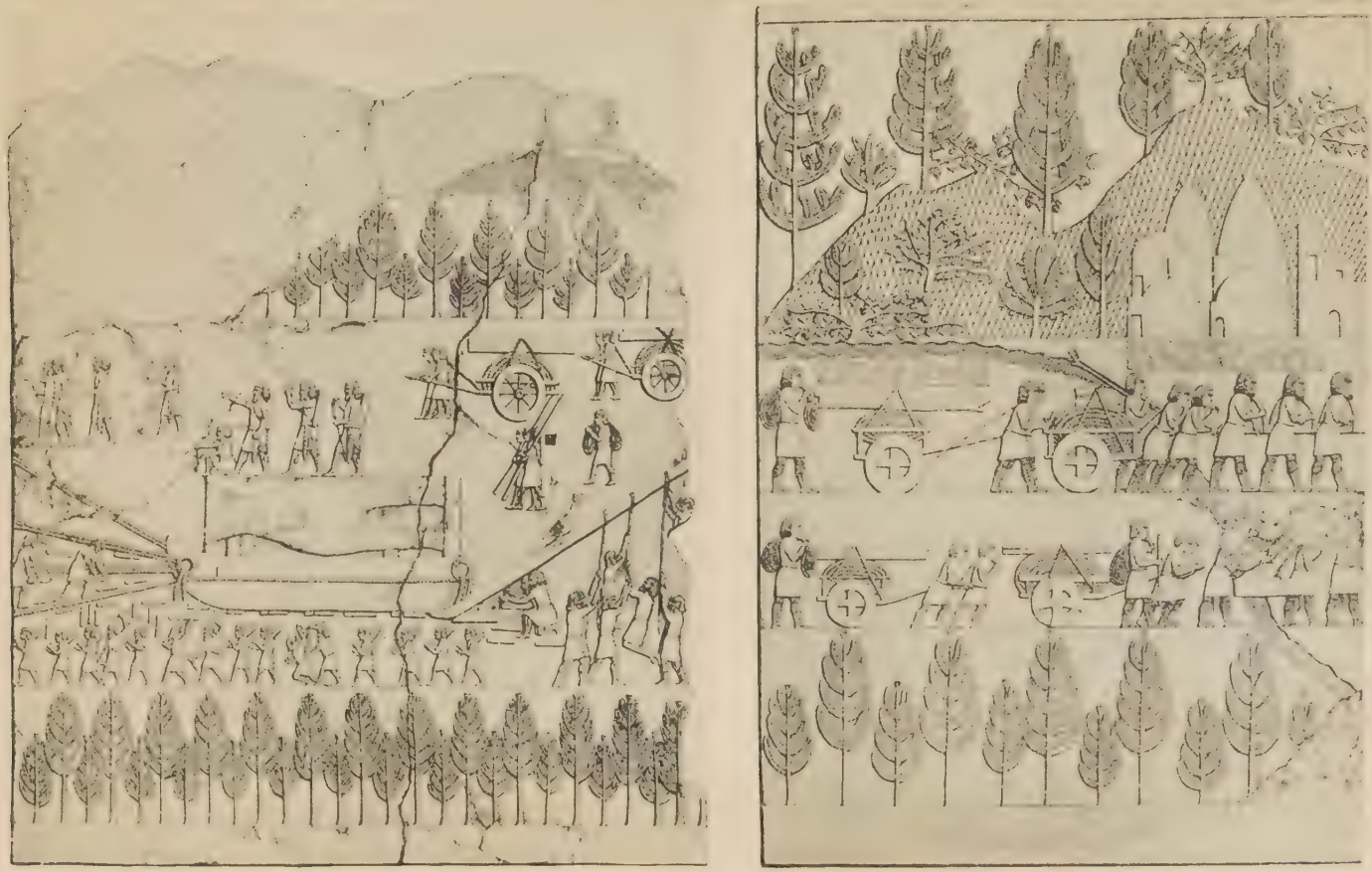
Temple at Nippur.—The earliest example, so far disclosed, is a temple at **Nippur,** which bears a close resemblance to the oldest pyramid in Egypt, **Medum,** before the latter had been faced. It is on the principle of the *stepped-pyramid,* consisting of several stories, each of which sets back from the one below it, while the walls of all have a batter. The terraces on one side are of extra width to allow for the stairways. This old type of stage-temple, called in the East *ziggurat* (holy mountain), derived probably from the ancient custom of worshipping in "high places," was still preserved in the famous



"SARGON'S CASTLE," NEAR KHORSABAD
CONJECTURED RESTORATION. P. 67



PART OF "LION FRIEZE" AND "FRIEZE OF ARCHERS"
EXECUTED IN GLAZED TILES. P. 72



DETAILS OF WALL DECORATION AT KOYUNJIK

Showing (Left) the Handling of a Colossal Bull Statue; and (Right) That the Assyrians
Used Some Form of Dome-Roofs

Temple of Nebo, rebuilt by Nebuchadnezzar at **Borsippa.** Only four stages of the latter survive, but a record discovered in the ruins shows that the original number was seven, dedicated to the seven planets and decorated with the colours sacred to each. The ground story of this temple was 272 feet square and 45 feet high, while the total height of the structure was about 160 feet. It is noteworthy that the tomb-pyramid of **Medum** also consisted of seven stories.

In a ziggurat at **Tello,** opened up by the French savant, de Sarzac, was discovered a magnificent collection of statues of diorite—a mixture of granite, felspar and hornblende—dark grey in colour—which is now in the Louvre. One of these, which has lost its head, represents a certain Gudea, priest-king and architect of Lagash. He is seated and carries on his lap a tablet, on which a fortified enclosure is engraved, while in the corner appear a dividing scale and a stylos.

Sargon's Castle.—The oldest palace remains have been discovered at **Nimroud,** the ancient Calah. They belong to the palace of Assur-nazar-pal (885–860 B. C.). Ten miles to the northeast, at **Khorsabad,** the French explorer P. E. Botta, discovered in 1843 the remains of a tower and palace, which subsequent excavations have proved to be the ruins of Dur-Sharrukim, "Sargon's Castle," built by Sargon as a royal residence (705–702 B. C.). The remains of the palace, being the most extensive of those hitherto explored, can be studied as a type of Assyrian palace architecture.

The platform on which the palace stood, constructed of sun-dried bricks and faced with cut stone, reaches the immense size of nearly a million square feet, raised forty-eight feet above the surrounding level country. The to-

tal platform, therefore, measured about 23 acres, as compared with the 3½ acres occupied by the Capitol at Washington, or the 8 acres occupied by the Houses of Parliament in London. Making allowance for the fact that the Assyrian Palace did not extend over the whole of the platform space, its actual dimensions must have been approximately twice as large as the Houses of Parliament and four and a half times those of the Capitol.

Leading up from the level on the northeast side appears to have been a double ramp, for the use of chariots and for general service, while the state entrance was at the southeast by a double flight of steps. These mounted to a terrace that extended the whole length of the palace front, some 900 feet. In the centre of this façade was the principal gate, which was small in actual size, but flanked by two tower-like projections of masonry. These, for the moment, may recall the pylons that flanked the entrance to an Egyptian temple. But the latter stately structures, built with a batter and crowned with a *cavetto cornice,* were designed for monumental dignity. On the other hand, the towers of Sargon's Castle were pierced near the top with loop-holes and surmounted by battlements. They were designed to serve the purpose of warlike defence and suggest appropriately that the entrance is not only to a palace but also to the castle or stronghold of a feudal chieftain. The same suggestion is prolonged in the battlemented walls, free of windows and only occasionally pierced with loopholes, which seem to have surrounded the entire structure.

Gateway.—The towers were embellished with a notably structural decoration, a system of rectangular panelling, filled with semi-circular shafts. The ornamental details were derived from the Chaldæan use of glazed tiles,

decorated with rosettes, palmettes, lotus-flowers and the *guilloche* or repeat of intertwined bands, arching round a central button. Similarly decorated is the *archivolt* which surrounds the arch of the entrance, the latter being a *barrel-* or semi-circular-vaulted passageway, carried right through the thickness of the walls.

Colossal Bulls.—In Egypt the entrance to the temples was made solemn and magnificent by colossal statues of the monarch. Here, the beholder must have been filled with awe by the colossal monsters that stood as guardians of the portal, projecting from the side-posts of the gateway and ranged in pairs at the foot of each tower. These monsters, which are now in the British Museum, fitly embody the warlike ideals of the Assyrian nation. They loom up in height to twelve feet. Their bodies are those of bulls, mighty in bulk and thews; yet they are quick to attack, having eagle's wings, while dominating them is the head of a man, large-eyed, thick-lipped, square of jaw and hairy, implacably sensual and cruel.

The modeling of these monsters is for the most part as broad as a Barye bronze; though minute detail is attained in the sculpturing of the beards, hair and head-dresses. But, while their treatment is in the main naturalistic, their motive is not representation of nature, but the representation of an idea through natural suggestion. Accordingly, each embodiment has five legs; the two forelegs, planted side by side, being supplemented by another in the act of walking; so that whether the monster be viewed from the front or the side, the full significance of the legs is emphasised—the forelegs representing firmly established power; the side view showing the legs in free and powerful movement.

No Columns.—The arched entrance leads into a large

open court that corresponds to the great court of an Egyptian temple, although here the sides are not embellished with colonnades. For, nowhere in Assyrian architecture has the column been found as a structural member. The single example which has been excavated, measured only three feet four inches in height and, it is conjectured, was used for a pavilion, possibly to support an awning. The absence of columnar construction in the early buildings of the Lower Kingdom is easily accounted for by the scarcity of stone; and the northern builders in dispensing with columns were only following their usual habit of imitation.

No Windows.—Meanwhile, another reason for the absence of columns may be found in the fierce heat of Mesopotamia, against which colonnades would prove no protection. The same cause explains the absence of windows in Assyrian palaces, for none have been found or shown in any of the bas-reliefs. It has been considered possible that such light as was needed was admitted through terra-cotta pipes or cylinders, for many of the latter have been come upon in the ruins and this method is still employed in the East for the lighting of domes.

?Barrel Vaults?—Another feature of the interior construction was the immense thickness of the walls, which varied from nine to twenty-five feet in solid brickwork. The object may have been to secure additional coolness, but this reason will scarcely afford a complete explanation of the extreme measurement. It is significant that the latter occurs in the halls of state which are also distinguished by their great length of 150 feet as compared with the width, 30 feet. When the narrow width of the halls is considered in relation to the immense thickness of the walls, it seems reasonable to conclude that the

latter were intended to support the downward strain of barrel-vaulted ceilings. Additional probability is given to this conclusion by La Place's discovery of great blocks, curved like the soffits of a vault, which had apparently fallen from a height. Moreover, in a bas-relief found by Layard in Koyunjik some of the buildings are shown to be roofed on the outside by domes. Accordingly, it is now the generally accepted belief that the usual style of ceiling employed by the Assyrians, was the barrel-vault.

The origin of the latter may be found in the culverts by which the mounds were drained; but how, considering the scarcity of timber, it was possible to construct vaults of thirty feet span, is purely a matter of conjecture. It has been suggested that, while timber was costly, slave-labour was cheap, and it is possible that temporary structures of brick were erected as an underpinning to support the vault while in process of construction. On the other hand, we shall note later on that the architects of Gothic cathedrals, in countries where timber was scarce, adopted the method of rib-vaulting. Can it be possible that this invention was anticipated by the Assyrians?

Decorations.—The walls of these halls of state were decorated up to a height of nine feet with sculptured slabs of delicate white alabaster or brilliantly yellow limestone, on which traces of paint have been discovered. As in the case of the Egyptian temples, scenes of everyday life, as well as of war or hunting, are represented, with a vividness that shows how closely nature had been studied by the sculptors, who, however, were more intent upon representing the spirit of the scene and preserving the feeling of decoration than in imitating nature.

Thus, when they represented an archer, stretching his bow, neither the string nor the arrow was allowed to cut

the lines of the figure. Both were shown as if the hand which held them were on the opposite side of the body. It is needless to say that this could not have been due to ignorance or negligence on the part of the sculptor, who otherwise proved his knowledge and observation of nature; but was a deliberate kind of conventionalisation, adopted, like the five legs of the colossal bulls, for a well-considered purpose—perhaps, not to interfere with the action of the figure.

Above the dado of sculpture the walls were embellished with glazed tiles, decorated with winged figures of the King, and occasionally with animals, especially lions, framed with borders of rosettes. The usual colours were yellow, blue, green, and black. Coloured tiles also, as well as slabs of alabaster, formed the paving of the floors, which, in the case of smaller rooms, were formed merely of stamped clay, covered, no doubt, while in use, with mats or rugs.

Wall paintings of figures and arabesques seem to have been an exceptional form of decoration, found at Khorsabad only in the larger rooms of the harem.

Yet for all this brilliance of decoration, the effect of the interiors must have been one of subdued richness. The imagination, indeed, pictures the vast palace with its labyrinth of seven hundred rooms, surrounding three sides of the entrance court, where the glare of sunshine would be pitiless, as a sort of subterranean arrangement of tunnel-like passages and chambers.

Their distribution can be studied in the ground plan restoration. There were three groups, each disposed around its own central court. On the left of the main court lay the harem, with its separate provision for four wives, while on the opposite side was accommodation for

the service, including kitchen, bakery, wine cellars, and stables. Fronting the main entrance were the King's suite of rooms and the quarters of his official staff, beyond which were the halls of state. In the open space, adjoining the royal rooms, rose the ziggurat, or terraced temple, the three lower stories of which still exist, connected by a winding ramp.

The conception that one gathers of this huge pile is, externally, of a stronghold, somewhat forbidding; internally, of a crypt-like maze, offering perhaps comfort, but little beauty—the lair of the absolute monarch of a race to whom the market-place and fields of battle and hunting represented the chief ideals of existence.

CHAPTER V

PERSIAN CIVILISATION

The name Iran, by which the Persians still call their country, preserves the origin of their race. They were Aryans, as distinguished from the Semitic peoples; a branch of the race which migrated from the country now called Southern Russia and Turkestan into the rich lands of the South. One branch pushed on to the Ganges and became identified with India; the other settled about the Indus, whence they gradually pushed their way westward. This branch comprised many tribes which in time developed into peoples.

The most powerful of these at the period when the Aryans first came into conflict with the Semitic race, was the Medes, who occupied the northern part of the west side of what is now Persia, while the Persians, who rose to supremacy later, occupied the southern part. This western division of the country, separated by a desert from the eastern, entirely differs in character from Mesopotamia.

For a distance of 50 miles from the Persian Gulf it is flat, swampy, and unhealthful. Then it rises to a system of mountain ranges that average five thousand feet in height, broken up with valleys, lakes, and countless streams. It was a country admirably adapted to rear a hardy and industrious race of men and fine breeds of cattle and horses. The Aryans seem to have always been cattle breeders, from which fact is supposed to be derived the reverence of the cow, which still exists in India.

They were also great lovers of the horse and it was not until after 1700 B. C. when advanced posts of the Aryan migration came in touch with the Semitic nations of the West, that the horse made its appearance in Babylonia, Egypt, and Greece. But, while the bas-reliefs of the Egyptians after this date show the horse used only in chariots, its general use among the Persians was for riding purposes. So the love of the modern Aryan races for the horse and horse exercise is an inherited instinct that knits them like their language to their earliest ancestors.

Of the Assyrian Kings, Shalmaneser II was the first to come in conflict with the Medes, and from this date (836 B. C.), the Medes are frequently mentioned in Assyrian records as paying tribute. Finally, in 626 B. C., the fortunes of war began to be reversed. The Median King, Cyaxares, as we have seen in a previous chapter, formed an alliance with Nabopolassar that resulted in the ousting of the Assyrian domination from Babylon and the establishment of the New Babylonian Empire. The Medes followed this up by a vigorous campaign against Assyria which resulted, in 606 B. C., in the taking and destruction of Nineveh. New capitals were built at Susa and Ecbatana and the sway of the Medes extended over Northern Mesopotamia, Armenia, and Cappadocia.

Then in 550 B. C. the Median supremacy ceased. Cyrus, King of Persia, of the clan Achæmenian, rebelled against his suzerain, Astyages, the son of Cyaxares, conquered him in battle and became the founder of the Persian Empire. He captured Babylon in 538 B. C. and gradually extended his sway from the Indus River to the Ægean Sea and the borders of Egypt. In his homeland of Persia he founded the city of Pasargadae, the modern Murghab, where he built himself a palace and a tomb. For it was

here that his Persians, urged on by their women-folk, had struck the final blow that conquered the Medes. Accordingly, each king of the Achæmenian dynasty was here, in the temple of the warrior goddess, invested with the garb of Cyrus and partook of a meal of figs, terebinth, and sour milk; and, whenever he visited the city, gave a gold piece to every woman.

Darius I, fourth of the Achæmenian dynasty, founded Persepolis, about forty miles northeast of the modern Shiraz, commenced building the famous palace and constructed for himself a tomb. Xerxes I added a palace and a tomb of his own, while tombs also were built by Artaxerxes III and Darius II. But, while Persepolis remained the favourite resort of the Persian Kings, it was too remote a spot to be the seat of government, which continued to be divided between Babylon, Susa, and Ecbatana.

Meanwhile, under Xerxes I the Persian power came into conflict with the Hellenic and was worsted in the battles of Platæa and Thermopylæ and the sea-fight at Salamis. Henceforth the advance of the Persian Empire was checked; dissensions began to weaken it; the central authority relapsed into feebleness, with lurid intervals of cruelty, until finally it succumbed to the rising tide of Macedonian conquest. In 331 B. C. Alexander the Great crushed the army of Darius III near Arbela; took in turn the cities of Babylon, Susa, and Ecbatana and stripped them of their treasure, finally capturing Persepolis, and setting fire to it.

This act of vandalism has been variously explained. One story, which forms the subject of Dryden's "Ode to Saint Cecilia's Day," had it that the wanton act was instigated by the courtezan, Thais. Another story is that it

was an act of revenge for the destruction of Greek temples by Xerxes I; while still another relates that in this destruction of the very heart of Iran, Alexander wished to impress the Oriental imagination with the absoluteness of his supremacy.

After being subject to the rule of the successors of Alexander and to the domination of the later Parthian Empire, Persia once more became an empire under the Sassanian Dynasty, Ctesiphon being one of its chief cities. In the seventh century A. D. it was conquered by the Saracens and entered into the Mohammedan civilisation, which we shall discuss in a later chapter.

The rapid rise of the Persian power was due to the hardiness of this mountain race and its highly organised preparation for war. Every Persian able to bear arms was bound to serve the King: the great landowners on horseback, the commonalty on foot. The army, therefore, unlike those of the Oriental nations it encountered, was composed of cavalry as well as infantry; and, while the latter, armed with bows, kept the enemy at a distance and harassed them with storms of arrows, the cavalry, operating on their flanks and rear, completed the rout. It was only when the power had become unwieldy by its very vastness, that this method of warfare proved useless against the Greek hoplites and the massed formation of the Macedonian phalanx.

In its beginning the Persian system was a beneficent feudalism. The nobles, excused from personal cultivation of the soil, were pledged to appear at Court as frequently as possible. Their children were brought up in company with the princes "at the Gate of the King," instructed in riding, hunting, and the use of weapons, edu-

cated to the service of the State and a knowledge of the law, as well as to the commandments of religion. Under Darius, who completed the vast structure of empire which Cyrus had founded, the organisation of government and society was on broad and free lines; an empire established in righteousness, following the precepts of Zoroaster.

It is concluded from various testimony that this great prophet of the Aryan peoples lived about 1000 B. C. He taught that in this world there is a continual conflict between the Powers of Good—Light, Creative Strength, Life, and Truth—and the Powers of Evil—Darkness, Destruction, Death, and Deceit. At the head of the Good Powers is the Great Wisdom Ahuramazda, whose helpers are the six powers of Good Thought, Right Order, Excellent Kingdom, Holy Character, Health, and Immortality. At the head of the Evil, Ahriman. Midway between these Powers is Man, who has to make his choice on which side he will take his stand. He is called to serve the Powers of Good; to speak the truth and fight a lie; to obey the command of law and true order; to tend his cattle and fields; to practise the Good and True in thought, word, and deed, and to keep from pollution the elements of the earth, water, and particularly fire. For Zoroaster preserved the old Aryan belief in the element of fire. Altars were erected upon the hills, tended by fire-kindlers, who were the ministers of the true religion and the intermediaries between God and man.

Moreover, Zoroastrianism was a proselytising religion. Ahuramazda, whom king and people alike acknowledged, had given them dominion "over the earth afar, over many peoples and tongues." Yet, while they felt it to be their destiny to rule the whole world, the Persians believed that it was the will of Ahuramazda that they must govern

it aright. Hence they treated the conquered with clemency and employed their leaders as administrators and generals. Cyrus, for example, permitted the Jews to return to Jerusalem and restored to them the temple vessels of gold and silver which had been taken by Nebuchadnezzar.

Thus, the religion of Iran had to do with practical life, this world and the joy thereof, and moral conduct; and as long as it retained its character of plain living and high thinking—of which the simple coronation ritual of the kings was symbolical—the Empire continued strong. Luxury, however, gradually crept in; the Persian Kings vied with the Kings they had conquered in magnificence of living and slowly but surely the strength of the Empire was sapped.

Cruelty also became part of the Persian religion, as indicated by remains of human sacrifices taken from ash-heaps that stood beside Zoroastrian altars. This also caused a degeneration to devil-worship, which in some localities survives to-day.

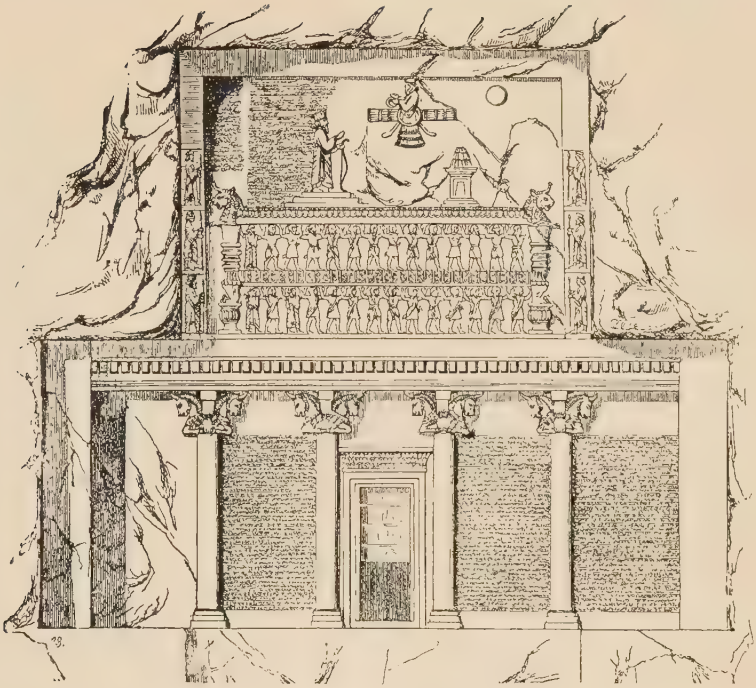
CHAPTER VI

PERSIAN ARCHITECTURE

Combination of Style.—In the days before their supremacy the Persians, as agriculturists and breeders of cattle and horses, preserving their simple existence, had no desire or need of monumental architecture. But when Cyrus had overthrown the domination of the Medes, made himself master of Mesopotamia and extended his conquests to the shores of the Ægean Sea, he too was minded to immortalise in architecture the might of the Persian Empire. Accordingly, as his race had no traditions in building, he borrowed from the methods and styles of the nations he had conquered. Thus Persian architecture represents a mingling of Median, Assyrian, Asiatic Greek and, in a small degree, Egyptian.

The boyhood of Cyrus was spent at the court of Astyages the Mede, so that the Median palaces at **Susa** and **Ecbatana** were familiar to him. Those of the latter city, according to Polybius consisted of porticoes and hypostyle halls, the columns being of cedar or cypress, overlaid with plates of silver. These have long since disappeared, and the remains which now exist at **Ecbatana** are of columns of stone, which are supposed to be part of the restoration of the palace under the Persian Kings. For the substitution of stone for wood in the columns distinguishes everywhere the Persian architecture.

Tombs and Palaces; No Temples.—The remains of Persian architecture comprise tombs and palaces. The

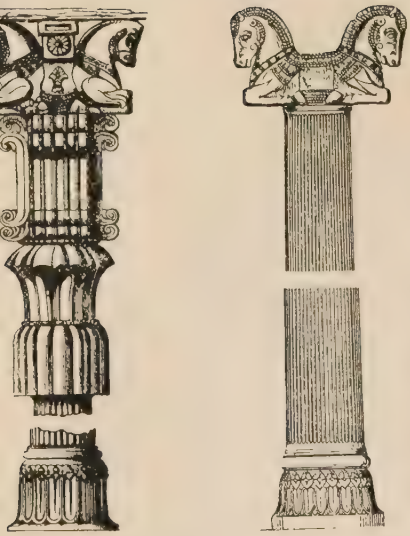


TOMB OF DARIUS I

EXCAVATED IN THE MOUNTAIN SIDE, PERSEPOLIS. P. 82

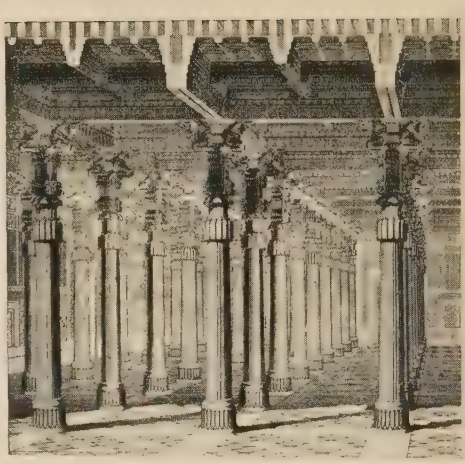
PALACE OF DARIUS I, PERSEPOLIS

CONJECTURED RESTORATION. OF WHICH THE TOMB FAÇADE WAS AN IMITATION. P. 82



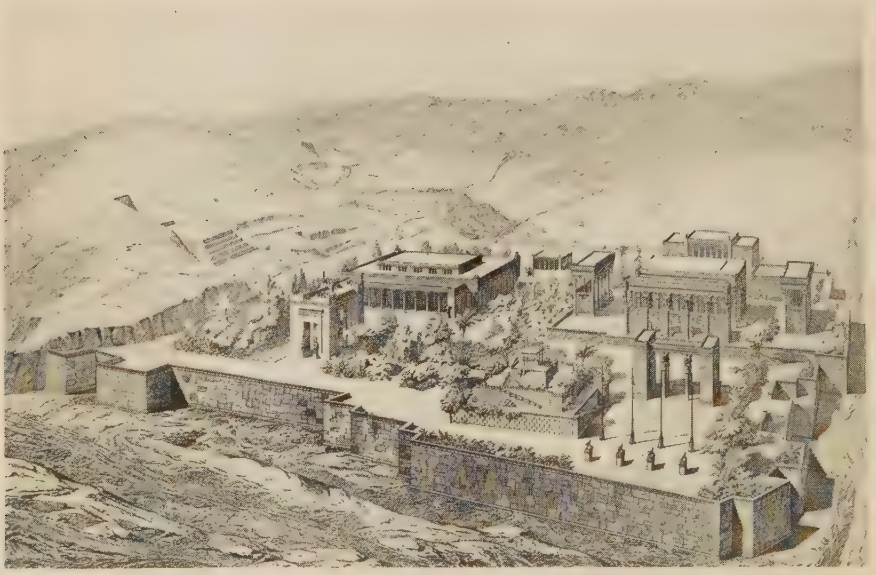
TYPES OF PERSIAN COLUMNS

P. 83



HALL OF ONE HUNDRED COLUMNS, PERSEPOLIS

CONJECTURED RESTORATION. P. 85



THE PALACES OF PERSEPOLIS

CONJECTURED RESTORATION. P. 84

Zoroastrian religion had no use for temples made with hands. Its temple was the universe; the floor of it the mountain tops of Persia from which countless altars, tended continually by the Fire-Kindlers, sent up flames in worship of the element of Fire. Meanwhile it was the desire of every Persian Monarch whom war and government obliged to be absent so much from the homeland, that, when they died, their bodies should be brought home "to the Persians." Accordingly, when Cyrus erected a palace at **Pasargadae**, the modern Marghab, he also built himself a **Tomb**, which still exists.

Its style is a singular mixture of Assyrian and Asiatic Greek. Built of large blocks of white polished marble, it consists of a platform of seven steps, on the top of which is a small shrine or cella, rectangular in plan, covered by a pitched roof that terminates in the front and rear, in a gable-end or pediment. It is, in fact, a Greek temple of very rudimentary simplicity, mounted on a ziggurat. The ruins show that the tomb was surrounded on three sides by colonnades.

Following the Assyrian precedent, the **Palace of Cyrus** occupied a platform, of about 40,000 square feet, which still exists and is known to the natives as "The Throne of Solomon." But here the terrace is of natural rock, faced round the sides with cut stone walls distinguished by the beauty of the masonry. It is the earliest instance known of the so-called *drafted* masonry, of which a magnificent example is found in the terraces of Herod's temple at Jerusalem. It represents a method of cutting, which leaves the surface of the block of stone rough-hewn, as when it left the quarry, but dresses the edges to a "draft," or smooth, bevelled surface.

Such scanty remains as have been found suggest that

Cyrus's palace was of the simplest kind, including a central hall, the roof of which was carried by two rows of stone columns, thirty feet high, with porticoes *in antis*. The latter is a feature borrowed from Greek-Asiatic temple-building; the term, *in antis*, being used when the columns of the portico are set between the prolongation of the side walls of the main building.

It is, however, from the remains of the group of buildings at **Persepolis** that the magnificence of Persian architecture can be best appreciated. Here, again, is a terrace of natural rock; but of vast size, covering an area of about one million six hundred thousand square feet. This, like the terrace of the Escoriál of the Spanish Kings, projects from the foot of a rocky mountain side. The Escoriál includes a royal mausoleum, built within the confines of the palace; but, at Persepolis, three tombs, one of them unfinished, are excavated behind the palace in the mountain wall. Two are supposed to be the resting places of later kings, Artaxerxes II and III, while the unfinished one is that of Arses, who reigned only two years.

Meanwhile the **Tomb of Darius I**, the founder of Persepolis, has been identified as one of four tombs, eight miles distant from the palace. These also are excavated in the mountain side, and at such a height from the bottom of the valley, that they corroborate the account which Ctesias, the Greek historian of Persia, gives of the tomb of Darius, that it was on the face of a rock and only to be reached by an apparatus of ropes. The three other tombs of this group are ascribed to Xerxes I, Artaxerxes I, and Darius II.

The Tomb of Darius I is of special interest because it bears upon its face a sculptured representation of the

palace which he built at Persepolis. This mode of decorating a tomb was probably derived from the Lycians, whose custom it was to face their rock-cut tombs with a representation of the house which the deceased had occupied while alive. Meanwhile, there is little doubt that the Lycians derived the idea of the rock-hewn tomb from Egypt.

The sculptured front of Darius's tomb shows the portico of the palace, and above it, upon the roof, the monarch himself upon his throne. The latter is an immense cube, the face of which is decorated with an upper and a lower row of warriors, or perhaps, tribute-bearers, while the corners are buttressed with baluster-shaped columns, surmounted by bulls' heads. The monarch stands before the altar, with hands uplifted in worship of the sun and moon. This recognition of the religion of the Babylonians and Assyrians is characteristic of the Persian attitude toward conquered nations, and recalls Cyrus's proclamation to these nations, guaranteeing them their life and property and designating himself the favourite of their own sun-god, Marduk, Bel-Merodach.

The lower part of the façade of the tomb represents the portico of Darius's palace. The four columns are set *in antis,* but we have to imagine the second row of columns as well as the windows which flanked the door, and, like the latter, were constructed, as the ruins of the palace shows, with monolithic jambs and lintels.

The **columns** suggest two considerations: first, the use of them, as compared with the entire absence of the structural column in Assyrian and Babylonian architecture, and, secondly, the peculiar design of their capitals. The use was derived through the Medes probably from Asiatic-Greek models; but the form of the capital is

peculiar to Persian architecture. It is composed of the head and forelegs of two recumbent beasts, which have been called bulls, but bear much more resemblance to horses, and when they have a horn, to the unicorn, a fabled creature that early legend attributed to India. It was identified with strength and fleetness and might well have been used symbolically by a race that derived from the same Aryan source as the Indians; while the use of the horse in decoration would come naturally to a nation of horse-lovers. It is also noticeable that these beasts are embellished with trappings that suggest harness.

However this may be, the tomb carving shows between the heads, the ends of the beams that support the cornice and roof. As these are not found in the case of the columns at Persepolis, it appears that the roofs of the palaces were constructed of wood, which perished in the fire of Alexander. It has been remarked that the character of this whole portico, taken in connection with the wooden columns at Pasagardae, suggests that the style of Persian palace architecture was derived originally from a primitive wooden construction. But, while this may be true, its development into stone construction was not affected by the Persians themselves. They employed Asiatic-Greek workmen whose style of temple-building, like that of the Mainland-Greeks, shows the traces of primitive wood construction.

Before leaving this tomb, there is one other feature to be noticed; namely, that the lintel of the doorway is surmounted by a cavetto-cornice, decorated with rows of conventionalised lotus-petals, derived through Lycia, from Egypt.

The restored plan of the platform of palaces at Persepolis exhibits a monumental approach on the west

side, formed of a double flight of marble steps, set in double ramp. The steps are 22 feet wide, with a rise of 4 inches and a tread of 15, so that they could easily be mounted by horses. The stairs led to a terrace, paved, as was the whole platform, with marble, in the centre of which was the entrance gate, or, to use the later classic term, a Propylæa. This was square in plan, with a portal, front and rear, flanked by winged bulls, while the ceiling was supported by four columns. Its walls, like those of the other buildings, built of sun-dried bricks or *rubble* masonry, set with clay mortar, have long since crumbled into ruins.

The earliest palace of the group is that of Darius I, to the portico of which we have already alluded. Its plan shows a room, right and left of the portico, in which may have been stairs leading to the roof; then a square hypostyle hall of sixteen columns, set in rows of four, with various chambers, along the sides and at the end.

In one building, the **Hall of a Hundred Columns**, the roof was carried by ten ranges of ten columns; for the hall, as indeed were all the halls at Persepolis, was square in plan. This can scarcely have been a mere coincidence. Is it fanciful to imagine that a people, trained in Zoroastrianism, found in the principle of the square a fitting symbol of "Creative Strength" and "Right Order"?

But the most important building at Persepolis, "one of the most stupendous relics of antiquity," is the great **Palace of Xerxes**. Elevated on a terrace of its own, twenty feet high, which was ascended on the north side by four flights of steps, it occupied an area of one hundred thousand square feet, more than double that of the Great Hall at Karnak, and larger than that of any Gothic cathedral in Europe, Milan and Seville alone excepted.

Two rows of six columns supported each of the three porticoes, and six times six the ceiling of the Hall: in which combination one may perhaps detect a symbol of the Six Helpers of Ahuramazda, "the spiritual Wise One" or "Great Wisdom."

The columns, including base and capital, rose to a height of 65 feet, which may be compared with the 69 feet of the central nave columns in the Hall of Karnak. The latter, however, had a diameter of 12 feet, and were separated by intervals of scarcely twice that width; while those in Xerxes' palace were set at a comparatively far greater distance from one another and measured in diameter only about 5 feet. Moreover, instead of a minimum of light percolating through a clerestory as at Karnak, the light and air streamed freely through the windows in the walls of Xerxes' palace, so that in every respect the impression produced by the two halls must have been very different.

The grandeur of Karnak was weighted down with mystery and awe, while Xerxes' "lordly pleasure house" was an exalted symbol of the Zoroastrian belief in the joy of life. For in addition to the grandeur of its structural features, the imagination must picture the accompanying gladness of marble floors, water basins, fountains, and flowers, and varicoloured rugs and hangings. The walls, also, may have been resplendent with brilliantly enamelled tiles as in Xerxes' other palace at **Susa**, where the French explorer, M. Dieulafoy, discovered the magnificent frieze of archers, a frieze of lions, and other decorations executed in bright-coloured enamels on concrete blocks. That Xerxes spared no pains to render his palace at Persepolis as superb as possible may be inferred from the columns in the hall and north portico. For in them

the double capital of beasts does not rest directly on the fluted shafts, but is supplemented by two lower members: the first a curious arrangement of scrolls or volutes, the second a sort of conventionalised calyx of the lotus, beneath which, in bell-like form, is a conventionalisation of pendant leaves. In the volutes a suggestion of the Ionic capital has been detected, while the lower points to an Egyptian origin.

This medley of motives has a certain decorative value, but lacks the supreme beauty of architecural relationship between the parts and the whole. That is to say, the use of the various parts has not been regulated by *constructive* logic, necessity, or fitness; but represents a purely whimsical and arbitrary multiplication of motive. The student may assure himself of this by comparing the Persian column with the Doric Order. In the latter he may observe a superior quality of fitness in the relationship of the parts and of the sense of an inevitable logical growth in the composition as a whole.

The fantastic elaboration of the columns at Persepolis, as well as the general conglomeration of motives in Persian architecture, points to the fact that the latter was the work of foreign artists, imported from various parts of the great Persian Empire. It represents the character of the empire—a variety in unity; a unity, however, not of natural growth, but one that, having no artistic traditions of its own, puts the world under tribute to supply motives for the exploitation of its magnificence.

CHAPTER VII

MINOAN OR ÆGEAN CIVILISATION

So far our study of ancient civilisation and architecture has been fairly consecutive. We have now to break the continuity of the story and take a leap back into a remote past and explore the origins of a civilisation which was a forerunner of that of Greece. This civilisation had been called "Mycenæan" because its existence was first brought to modern knowledge by Schliemann's discoveries in Mycenæ. But subsequent exploration has proved that the civilisation was far spread and that Mycenæ was not even the centre of it.

One of the most astonishing results of recent exploration is the knowledge of a civilisation that developed without break from the polished stone age and reached its highest point contemporaneously with the New Empire in Egypt; ending, that is to say, about 1000 B. C. Not the least interesting feature of the discovery is that it throws a new light on the civilisation of prehistoric Greece.

The classical writers of Greece pointed to Mycenæ and Tiryns in Argolis as being the principal evidence of a prehistoric civilisation, which was assumed to belong to the Homeric period or even farther back to a rude heroic beginning of Hellenic civilisation. This opinion continued to be held by scholars until A. D. 1876. In this year, however, Dr. Schliemann, opening up the graves which are just inside the Lion Gateway of the citadel at Mycenæ, came upon a quantity of objects which proved the high state of civilisation to which the prehistoric inhabi-

tants of the city had attained. Furthermore, they corresponded in character to the vases and gold, silver, and bronze objects which, three years earlier, he had dug from the ruins of the "Burnt City" (Troy) at Hissarlik in the Troad. These objects from the peninsula of Peloponnesus and the mainland of Asia Minor were not only similar in character but also of a fabric and decoration which differed from those of any known art. But a relation between the objects of art described by Homer and these "Mycenæan" treasures was generally allowed.

In 1884–1885 Schliemann and Dörpfeld, exploring the ruins of Tiryns, came upon a building which offers the most complete example in Greece of a palace of the "Mycenæan" age, belonging to a period probably between 1400 and 1200 B. C. During the subsequent years of the nineteenth century, when exploration was extended to other parts of the Peloponnesus and Northern parts of Greece, dome or beehive tombs, such as had been found at Mycenæ, were discovered in Attica, Thessaly, and elsewhere. By degrees, exploration was carried beyond the mainland of Greece to the Ionian Islands and the islands of the Ægean, particularly to Cyprus and Crete and the mainland of Asia Minor. This resulted in further discoveries of objects, related in a common family, distinct from that of any other art division. Meanwhile, objects of similar character were met with in Egypt, Italy, Sicily, Sardinia, and Spain.

Finally, the culmination of all this mass of corroborative evidence was reached by the explorations of Dr. A. J. Evans, at Cnossus in Crete, which have been followed up by explorations in Phæstus, and other Cretan sites. The net result is to establish the knowledge that Crete was the centre of a civilisation which had dealings with Egypt

and Mesopotamia and extended to the sea-coast of Asia Minor and Phœnicia, the other islands of the Ægean Archipelago, the Ionian Islands, and the mainland of Greece and spread its offshoots along the west shores of the Adriatic, into Sardinia and Spain and took deep root in Sicily. To the far-extending ramifications of this civilisation has been given the comprehensive name of Minoan or Ægean.

In a most remarkable way the discoveries in Crete have corroborated the Greek legends of the Cretan King Minos. It is conjectured that a Minos may have been the founder of a dynasty and that the name passed into a title of all the rulers, corresponding to the title, Pharaoh, in Egypt. Scholars, therefore, have given the name Minoan to the civilisation of Crete; dividing it into Early, Middle, and Late Minoan.

In the Early Minoan Period, represented in the contents of early tombs and dwellings and such objects as stone vases and seal-stones, there is evidence that the Cretans had already reached considerable cultivation and had opened up communications with the Nile Valley. The date of this period is conjectured to have centred around 2500 B. C., and to have corresponded, roughly speaking, with the earlier of the Egyptian dynasties. Most remarkable of Dr. Evans's discoveries was the finding in 1900 of whole archives of clay tablets in the palace of Cnossus, which prove that the Cretans had a highly developed system of hieroglyphics and lineal script 2000 years before the time when the Phœnicians introduced writing into Greece. Incidentally, this knowledge corroborates the statement of the historian Diodorus, that the Phœnicians did not invent letters, but only altered their forms.

The Middle Minoan Period centres round 2000–1850 B. C., and corresponds with the Twelfth Dynasty in Egypt. It was the age of the earliest palace building. Already appears the beginning of a school of wall-painting, while a manufactory of fine faience was attached to the palace at Cnossus.

The Late Minoan Period covers the period of the Hyksos usurpation in Egypt and reached its own culmination about the time of the Eighteenth Dynasty when the New Egyptian Empire or Second Theban Monarchy commenced. We have already noted the appearance in Egypt of this Cretan influence, inducing a habit of naturalistic representation in place of the old conventionalised forms of sculpture and painting. To this late Minoan period belongs the greatest development of palace building, as seen at Cnossus, Phæstus, and Tiryns, while the painting on walls and vases becomes more free and animated than anything of the kind in Egypt.

Toward 1400 B. C. a period of decline becomes apparent in Cretan art, which is reflected all over the Ægean area. The conclusion is that the islands and mainland of Greece had been invaded by less civilised conquerors, who, having no cultivation of their own, adopted the art they found and spoiled it. Probably they came from the North of Greece and were precursors of the later "Hellenes."

Finally, about 1000 B. C., the palace at Cnossus was again destroyed, never again to be rebuilt; and at the same time the "Bronze Age" of Minoan and Mycenæan civilisation came to an end. It fell before a nation, barbarous, but possessed of iron weapons; probably the tribes which later Greek tradition and Homer knew as Dorians. Then followed a period of several centuries of unrest, as, successively, Achæan, Æolian, and Doric mi-

grations came from the North through the mainland of Greece and the islands of the Ægean, while an Ionian migration from Armenia spread to the west shore of Asia Minor. Finally, when the Ægean area emerges into history, it is dominated by Hellenes.

The Ægean Archipelago has been called the ancient bridge between the civilisations of the East and West, and the imagination pictures Crete at the southern end of it, within easy distance of three continents and engaged in peaceful intercourse with all; the head of a maritime confederacy of sea-rovers who planted their trading stations throughout the Mediterranean, their art everywhere following their trade. She herself was protected from aggression by her island walls; while the outposts of culture on the mainland of Greece—Mycenæ and Tiryns—were compelled to erect their palaces within citadels.

From the fact that no remains of Minoan and Mycenæan temples have been found, but only shrines within the precincts of the palaces, it has been concluded that, as in Assyria and Babylonia, the monarchs were also priests. Evidence points to the principal Minoan divinity being a kind of Earth Mother, who was associated with a satellite god. One part of her religious attributes survived in the later Aphrodite, the other in Rhea, the mother of the Olympian Zeus. While images of the deity were made as early as 2000 B. C. the principal objects of worship, or fetishes, in the Minoan age were natural objects: rocks and mountain peaks, trees, and curiously shaped stones, and even artificial pillars of wood and stone. Sometimes, as in the famous instance of the Lion Gate at Mycenæ, the fetish object—here a pillar—was guarded by animals.

A special form of fetish for the two principal divinities

was that of the double axes: one double-headed axe above another on the same handle. "It has been discovered," says the Encyclopædia Britannica (11th edition), "that the great Minoan foundation at Cnossus was at once a palace and a sanctuary of the Double Axe. We can hardly any longer hesitate to recognise in this vast building, with its winding corridors and subterranean ducts, the Labyrinth of later tradition. It is difficult, also, not to connect the repeated wall-paintings and reliefs of the palace, illustrating the cruel bull sports of the Minoan arena, in which girls as well as youths took part, with the legend of the Minotaur, or Bull of Minos, for whose grisly meals Athens was forced to pay annual tribute of her own sons and daughters." Actual figures of a monster with a bull's head and man's body have been found on seals in Crete, and evidence points to these bull sports being part of a religious ceremony.

Even the smaller houses were of stone, plastered within, while the palaces suggest a luxurious mode of living; being richly decorated, with separate sleeping apartments and large halls, fine stairways, bath-chambers, windows, folding and sliding doors, and remarkably modern arrangements for water supply and drainage. The furniture included thrones, tables, seats, constructed of stone or plastered terra-cotta; a great variety of cooking utensils and vessels of all sorts from stone wine jars, ten feet high, to the tiniest ointment-holders.

Ladies, in curiously modern costumes, formed a favourite subject both for wall-decoration and miniature painting; many of the latter showing groups with architectural and landscape surroundings, done with remarkable spirit and naturalness.

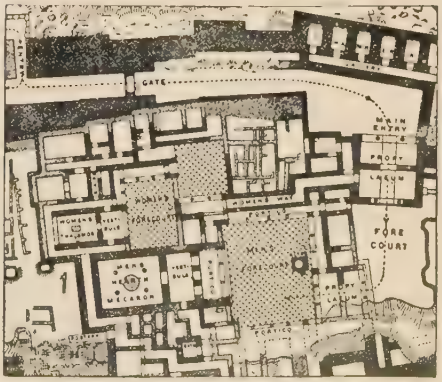
The clay tablets are almost exclusively concerned with

inventories and business transactions, and prove that a decimal system of numeration was used.

Next to Cnossus the most important sources of knowledge concerning this ancient civilisation have been Hissarlik, Mycenæ, Phæstus, Hagia Triada, and Tiryns.

WALL DECORATION IN PALACE OF CNOSSUS
SHOWING MALE AND FEMALE BULL-FIGHTERS. P. 93

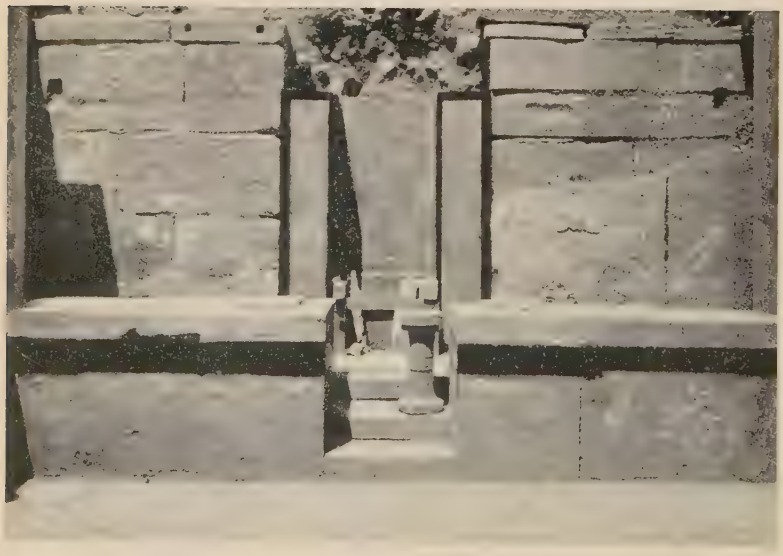
LYON GATEWAY AT MYCENÆ
P. 98



PLAN OF THE ACROPOLIS OF TIRYNS
P. 100

PARTS OF STAIRCASE IN PALACE OF CNOSSUS

P. 96



COUNCIL CHAMBER WITH GYPSUM THRONE

In Palace of Cnossus. P. 96

CHAPTER VIII

MINOAN OR ÆGEAN ARCHITECTURE

In so far as the prehistoric remains of Minoan or Ægean civilisation belonged to the Polished Stone Age and Bronze Age, they are in the phase of development that is represented in the Peruvian remains of the city of Machu Picchu. Meanwhile, in its active consciousness of beauty as a motive, the Minoan reached a perfection within the limits of its possibilities that carried it far beyond the Peruvian.

This may have been partly due to the influence of the neighbouring civilisation of Egypt, and also to the fact that the people of the Ægean area mixed freely in their roving life with one another and with outside peoples, so that there was a free-trade in ideas, and the seed which they planted grew and multiplied. But it must also have been due to something inherent in the race itself. What the race was has not been determined. So far, the examination of skulls and bones in Cretan tombs has established only the fact that the race, while showing signs of mixture, belonged on the whole to the dark, long-haired "Mediterranean race," whose probable origin lay in Mid-Eastern Africa. The main interest of this is to discredit an Asiatic source for Minoan civilisation. It is apparent from its achievements in engineering and the arts and industries that it was a race of great intelligence, with an active interest in life that led it to strive for the beauty as well as the conveniences of living.

Palace of Cnossus.—The palace of Cnossus occupies an area of about six acres, surmounting the debris of human settlements, which go back, it has been estimated, to a distance of from 12,000 to 14,000 years before the Christian era. The remains show that the palace formed a hollow square, constructed around a central court. The principal entrance was upon the north, though what appears to have been the royal entrance was upon the west, opening on to a paved court.

The west wing contained a small council chamber, or office, in which was found a throne, made of gypsum in a design curiously Gothic, around which were lower stone benches. The walls of this chamber were decorated with sacred dragons represented in a Nile landscape. They were executed, like the other paintings found in these Cretan palaces, in fresco; that is to say, in water colours mixed with some gelatinous medium, laid on the still damp plaster, so that as the latter dried the colour became incorporated in the actual material of the walls. To this council chamber was attached a bathroom, probably for ritual purposes.

Near it was also discovered a small shrine, containing figures and reliefs, exquisitely fashioned in faience, one of which shows a snake goddess and her votaries; this being one of the aspects of the chief divinity. The walls and pillars of these chambers are repeatedly decorated with the sign of the Double Axe, while miniature frescoes on the walls exhibit pillared shrines, with double axes stuck into some of the wooden pillars.

For the remains of the palace itself show that the pillars used in this construction were of wood, rounded like posts. The circular sockets still remain in the stonework and a comparison of the top and bottom ones shows that

the pillar tapered downward, the diameter at the bottom being six-sevenths of the top one.

Another feature of this west wing is a series of eighteen magazines or storerooms which contained quantities of clay documents and great stone jars. The latter are decorated with horizontal bands, connected by diagonal ones, like the straw work on a modern ginger jar. This design, wrought upon the stone surface of these colossal jars, is an interesting memento of one of the primitive methods of clay modelling. For, before the invention of the potter's wheel, the method of shaping, almost universally adopted, was one of the three following: (1) *scooping* out from a ball of clay; (2) or *coiling,* in which the clay was rolled out into thin ropes, which were coiled round and round upon one another and then smoothed over; (3) or the building up of the form upon a shape of *basket-work* or *matting.*

A large bathroom was discovered in the northwest corner of the quadrangle but the actual residential quarters seem to have occupied the east wing. There are the remains of a *Megaron,* or great hall of state, approached directly from the central court, near which were found painted reliefs, illustrating scenes of the bull-ring, with female as well as male toreadors. These and other reliefs, some of which also commemorated incidents of bull-fighting, were not carved upon the stone, as in the Egyptian temples, or executed in tiles, as in Assyrian or Persian temples, but applied to the wall with hard plaster. This method, known as *gesso* work, was used later in Byzantine decoration and by the Italians of the Renaissance, for decorative details; by Pinturricchio, for example, in the Borgia apartments of the Vatican. It has been revived by modern mural decorators; John S. Sar-

gent, for instance, employing it in some of his panels in the Boston Public Library.

To the south of the great hall a staircase, of which three flights and traces of a fourth are still preserved, descended to a series of halls and private rooms. Attached to one of these, identified as the "Queen's Megaron," was a bathroom, decorated with frescoes of flying fish. The drainage system in this part of the palace includes a water-closet and is of a complete and modern kind.

The character and features of this palace are repeated on a smaller scale in those discovered at Phæstus, Hagia Triada, and other spots in Crete, and resemble in the main those of Mycenæ and Tiryns.

A glance at the map of ancient Greece shows that these last two cities, situated at the north of the rich plain of Argolis, commanded the approaches to the peninsula of the Peloponnesus; Mycenæ occupying a strategic position on the highroad; Tiryns, on the sea. They were equally important in resisting invasion from the North across the Isthmus of Corinth, and in the struggle for supremacy that was waged between Argolis and the Peloponnesus. Accordingly, the distinguishing feature of each city was that it occupied an acropolis, the natural strength of which was increased by fortifications built with irregular blocks of stone of great size, in the style known as *Cyclopean.*

Mycenæ.—Those at Mycenæ surrounded an area which is roughly triangular in plan, the main entrance being through the above mentioned portal of the **Lion Gate.** Its side posts and lintel are composed of monoliths and surmounted by the famous lion-relief, which fills the triangular space formed by the gradual projection of the

stones of the wall. The pillar or fetish-post corresponds to the alabaster columns, now in the British Museum, which flanked the entrance of the **Treasury** or **Tomb** of **Atreus**, just outside the Lion Gate.

The shaft of these columns is without a base and tapers slightly to the bottom. Ornamented with bands of repeated *chevrons,* which alternately are plain and embellished with flutings, it supports a cushion or *echinus,* decorated with plain and spiral bands, on which rests a square plinth or *abacus.* It comprises, in fact, the features which in later times were simplified into the Doric column.

The tomb itself is a subterranean chamber, of the style known as *beehive* or in Greek, *tholos.* Its circular plan has a diameter of nearly 50 feet, and the domed ceiling, commencing at the floor and formed of inwardly projecting courses of stone, rises to about the same height. It leads into a small square chamber and is itself approached by a horizontal avenue, 20 feet wide and 115 feet long, the sides of which are of squared stone, sloping upward to a height of 45 feet.

A trace of this subterranean beehive method seems to survive in some of the rock-hewn tombs at **Myra**, in **Lycia.** Here the façade represents the front of a house, which is clearly of primitive wood construction. In later instances it is composed of Ionic columns and cornices. In the older examples the entrance is surmounted by a gable, which frequently takes the curves of the beehive.

Intermediate between these Lycian Tombs and the Minoan structures are certain rock-cut tombs in **Phrygia** which recall the Lion Gate. The façade comprises a cornice supported by columns, above which is a gable, oc-

cupied by colossal lions. At **Arslan**, one of these *pediments* shows two lions, in this instance not rampant, which support a central pillar. Inside, however, two rampant lions flank a nude human figure.

At Mycenæ are earlier tombs than that of Atreus, which consist simply of a deep shaft lowered into the rock. These are situated just inside the Lion Gate, the area which they occupy being enclosed by two concentric circles of thin slabs, set up on end with others laid across the top of them. It is a feature that in its attenuated form seems to recall Stonehenge. Dr. Schliemann reached the conclusion that these were the graves which were shown to Pausanias, as being those of Agamemnon, Cassandra, and her companions.

On the summit of the Acropolis at Mycenæ are the remains of a palace, similar to, but less extensive than, that of Tiryns, which we may therefore examine in preference.

Tiryns.—The palace of Tiryns, which probably dates to a period between the fourteenth and twelfth centuries B. C., seems to have combined the luxuriousness of the residence of an Oriental king with the feudal state of a mediæval baron and his crowd of retainers. The acropolis is of oval shape, with its long axis north and south, surrounded by immense ramparts of Cyclopean masonry, from 30 to 40 feet in thickness, while the outside height was about 50 feet and that of the inside 10 feet from the level of the ground. In certain parts chambers were embedded in the thickness of the wall, and round its inner side ran a colonnade, supported by wooden posts.

The area thus enclosed was divided into three successive levels, of which the highest was excavated by Schliemann and Dörpfeld, 1884–1885. The plan shows

the entrance situated on the west side, away from the sea, which probably was once fitted with a gateway similar to that at Mycenæ. The approach passes between massive walls to another gate, whence it proceeds to a propylæa, with rooms for the guard. This opens into a forecourt, from which another propylæa gives approach to the actual palace.

The first feature of the **Palace** is a court bounded on three sides by a post-supported colonnade. An altar or sacrificial pit is in the same position as that occupied by the altar of Zeus in a later Greek house. It may be possible in this connection to see evidence that the principal deity on the mainland of Greece was already, unlike that of Crete, a male; perhaps a terrible prototype of the later benignant Zeus, to whom human sacrifices were made, as to the hideous Mexican divinity, Huitzilopochtli.

On the north side of the court a portico, succeeded by a vestibule, gives access to the Megaron. In the centre of this is the hearth, a feature not needed in the warmer climate of Crete and therefore not found in the palaces of that island. Four columns supported the roof, the centre of which may have been raised to allow openings for light and smoke escape. Adjoining the sleeping chambers on the west side of this hall is a bathroom, about 12 feet by 10 feet, the floor of which is composed of a single slab of stone, sloped so that the water drained out through a pipe in the wall.

Another group of buildings, supposed, though without authority, to be the women's quarters, lies to the east of the great hall, from which, however, it is completely cut off by a solid wall; it is entered by two circuitous passages, one leading from the first propylæa, the other from a postern gate in the western rampart. Here again

the plan shows an open court, without an altar, from which a vestibule admits to a smaller megaron.

The floors of the megara are of stucco, incised with a series of lines, coloured blue and red, while the walls are decorated with frescoes as in the palace at Cnossus, one of the best preserved paintings showing a bull-fight scene. On the other hand, the palace of Tiryns shows part of a frieze of alabaster, sculptured in relief with rosettes and interlacing patterns and studded with jewel-like pieces of blue glass or enamel.

The walls to a height of about three feet above ground were of stone, above which they were continued with sun-dried bricks; the upper story being probably of wood, with roofs of stamped earth. The doorways, though sometimes of wood, were more usually constructed of monoliths. Bronze cup-like sockets, let into the stone thresholds, show that the doors revolved upon a pivot.

It is agreed that while the palace of Tiryns represents the general character of a royal house, as it is pictured in the Homeric poems, it is a mistake to look in it for an explanation of details of arrangement.

BOOK III

CLASSIC PERIOD

CHAPTER I

HELLENIC CIVILISATION

The use of the term Hellenic can be traced back to the seventh century B. C. It was the name under which the various streams of migration—Achæan, Æolian, Dorian, and Ionian—merged their differences in the proud recognition of a common race.

The date and extent of these migrations are clouded with obscurity; but certain points are clear. The Ionians came from Armenia and settled in Asia Minor and the adjacent islands, while the other three penetrated into Greece from the shores of the Baltic. The Achæan was the first to arrive and had maintained a long civilisation before the later migration of Æolians and Dorians. The Dorian invasion seems to have been especially aggressive and after fastening a hold upon the mainland of Greece extended to the Ægean Archipelago, overrunning Crete and wresting supremacy of the Mediterranean from the Minoan Sea-Kings about 1000 B. C.

Hellenic, however, never implied a national bond. The Hellenes were never united as one people under one government. Hellas was a congeries of independent states which even allowed their colonies, from the first, complete self-government. The bond which loosely held them together was the common sense of superiority to all other races; and as their civilisation developed, a common pride in its glory, not that this was sufficient to prevent continuous rivalry and frequent warfare between states and cities. Consequently, there is properly speaking no such

thing as Greek history; nor would it be profitable for our purpose to trace the rise and decline of the several states. It is better to consider Hellenism as a principle, the more or less common ideal of a people, not confined to Hellas, but spread over the littoral of the Mediterranean; wherever Hellenes settled—a race of mariners and merchants, thinkers and artists, who lifted themselves to so high a pitch of civilisation, that it became a source of inspiration to all subsequent culture.

In the Minoan and Mycenæan Age the political system was a monarchy that combined the functions of high priest and commander-in-chief. In the Homeric Age there were still kings who led their armies and acted as the intermediaries of the gods, but their power was controlled by a *Boule,* or consulting assembly. With the Dorians the rule of kings passed to that of oligarchies, chosen from one or more of the noble classes whose claim to government was founded on birth and the ownership of land. They were associated with a Boule, representative of the privileged classes, while the priestly functions were exercised by magistrates, who, however, were drawn from the aristocracy.

In many parts of Hellas the oligarchies gave way to "tyrannoi." These are not to be understood in the sense that our word "tyrant" has. They were a step in the evolution of popular government, inasmuch as they were a means of breaking up the exclusive authority of the privileged classes. To consolidate their own power, the tyrannoi sought the favour of the populace and made concessions in the direction of popular government. Accordingly, while some of the tyrannoi were succeeded by a return to the oligarchies, in more cases they prepared the way for a democratic form of government.

In order to take religion out of the exclusive domain of the aristocracy, the tyrants established popular cults. Peisistrates, for example, tyrant of Athens, is thought to have established the Great Dionysiac festival and raised the Panathenæa to the position of the chief national festival of the Athenian State. Everywhere the tyrants were the patrons of literature and the arts. To Peisistrates is attributed the first critical edition of the text of Homer, while under the encouragement of himself and his successors (the Peisistratids) which lasted from 560–511 B. C. architecture and sculpture also progressed to a degree that made possible their grandeur in the "Great Age." He is also said to have encouraged Thespes, the Attic poet, to impersonate characters and thus convert the narrative poem into dramatic form, laying the foundation of Greek drama.

Peisistrates also gave the people a constitution, extended the power of Athens by alliances, and increased its commerce. With the fall of the Peisistradids the rule of the many (*hoi polloi*) was assured. The government of Athens became democratic.

It is to be noted that while there were various forms of democratic government in Hellas, all differed from our modern conception of democracy. The latter is based upon the principle of doing away with privilege, while the Greek form implied privilege, although it enlarged its area. No foreigner could acquire citizenship, which also was denied to native-born inhabitants who were of foreign extraction, on either the father's or the mother's side. Furthermore, the Greeks regarded labour as a disqualification for political rights, and almost all unskilled labour and most of the skilled was performed by slaves. The latter, however, were well treated and not only en-

joyed personal liberty but also the opportunity of becoming prosperous.

Again, the government under the Hellenic democracy was not representative. The citizen body was so small that all could meet in the *Ecclesia* and register their vote directly on any question. Appointment to office was by lot and not election, and accordingly the number of citizens who held at one time or another big or little offices included a great majority of the whole body. The result of this was an intimacy on the part of all the citizen body with the machinery of government and the pros and cons of every question as it arose. They voted with intelligence and their votes counted directly; a system which helped immensely to cultivate their intellectual keenness.

The two Persian invasions, the first under Datis and Artaphernes (490 B. C.) in the reign of Darius I, the second by Xerxes in person (480–479 B. C.), had proved the need of closer co-operation among the Hellenic States, and the Delian League was formed under the leadership of Athens and with Athens as the "predominant partner." An annual tribute was paid by all the member-states for the maintenance of a fleet. Athens was the treasurer and the fleet was mainly Athenian, while the commanders were entirely so. The power thus concentrated in Athens gave her so marked a supremacy that Pericles used the League to form an Athenian Empire. This lasted about thirty years (461–430 B. C.), during which period Athens reached the culmination not only of her power but also of her magnificence. For Pericles spent the money, contributed by the allies for common defence, in beautifying the Acropolis; the excuse being that in doing so he was giving glory to Athena, who was the patron goddess of the League. Pericles also encouraged literature and

counted among his friends three of the greatest Greek writers—Sophocles, Herodotus, and Thucydides.

But the power of Athens incited the envy of the other states, which ranged themselves with Sparta. In the Peloponnesian wars, the supremacy of Athens was broken and the Athenian Empire was succeeded by a Spartan Empire, which in time succumbed to the Theban Hegemony. Finally Hellas was conquered by Philip of Macedon and passed into the Macedonian Empire, established by this king and enlarged by his son, Alexander the Great.

Through all these struggles Athens, though despoiled of her supremacy, played a big part until she was conquered by Philip at Chæronæa, in 338 B. C. The latter date is adopted as the end of the Great Age which had lasted since 480 B. C., including within its circumference the age of Pericles. Besides its triumphant achievements in architecture and sculpture, the Great Age comprised in drama the names of Æschylus, Sophocles, Euripides, and Aristophanes; in history, Herodotus, Thucydides; in oratory, Demosthenes; in philosophy, Aristotle and Plato. Meanwhile, the century preceding it had produced, among the poets, Anacreon and Sappho; and, as representatives of mathematics, astronomy, geography, and metaphysics, Thales, Pythagoras, Xenophanes, Heraclitus, Parmenides, Anaximander, and Hecatæus of Miletus.

It is significant that none of these last named poets and thinkers belonged to the mainland of Hellas, but to the islands and cities of the Ionian group or to the adjacent Cyclades. And what is true of literature is equally true of architecture and sculpture. In fact during the fifth century B. C. and also the three preceding centuries, culture had been more developed in Ionia than in Attica.

For, through its commerce with the East, Ionia reached a high state of prosperity and borrowed something of Eastern luxuriousness as well as Eastern thought and art ideals, just as in turn the East borrowed from it. Miletus was for a long time the wealthiest and most luxurious of Hellenic cities, rivalled only by Sybaris on the gulf of Tarentum; one of the flourishing cities of the so-called Magna Græcia in the south of Italy.

Similarly Corinth under the rule of her tyrants, Cypselus and his son Periander (657–581 B. C.), had enjoyed a period of great prosperity. She extended her trade from Asia Minor and Egypt to Magna Græcia in the west, and was also a great industrial centre, famous for its pottery, metal work, and other decorative crafts. Moreover, it was reported to have "invented" painting.

These brief references serve to emphasise two points: first, the wide spread of Hellenic culture; and, secondly, the variety that it exhibited. The most cherished sentiment in Hellas, as we have remarked, was that of autonomy. Even under the hegemonies and empires, individual cities and colonies were permitted self-government and, as its corollary, self-development. Hence the variety in unity that characterised Hellenic culture. The unity was strengthened and the variety diffused throughout the whole by the Festival-contests which were held at regular intervals. These originated in local religious festivals, which in time were thrown open to competitors from all parts of Hellas.

The oldest and the greatest was the Olympic Festival, held in the valley of the river Alphæus in Elis, which was celebrated at intervals of four years. The event became so important in the life of Hellas that the interval of four years between one celebration and the succeeding

one, called an Olympiad, became the measure for computing time, the first Olympiad being reckoned as 776 B. C. Originally the festival was held in honour of Hera, to whom a temple—the earliest as yet known in Hellas—was dedicated, 1000 B. C. Later the chief honour was paid to the Olympian Zeus. His temple, which in time contained the celebrated chryselephantine statue of the god by Pheidias, stood in a sacred grove, the Altis, which was adorned with statues of the successful athletes, made by the most famous sculptors. The sacred enclosure was surrounded by walls and colonnades, adjoining which, on one side, were the gymnasium, palæstra, and baths for the use of the athletes, whose training in the sacred precincts lasted for ten months, before they could compete in the stadium. The latter adjoined the Altis on the east side.

From all parts of Hellas, states and cities vied with one another in furnishing competitors and, as the date of the Festival approached, heralds proclaimed throughout the Hellenic world the "Truce of God" under which, for the time being, warlike operations were suspended and safe conduct was guaranteed to all visitors to Olympia.

The influence of Sparta had regulated the character of the contests of endurance: running, leaping, wrestling, boxing, to which in time was added chariot racing. But as the spirit of culture spread the Olympian and the other festivals included musical contests, while the poet declaimed his verses and the painter showed his work for the pleasure and profit of the assembled multitudes.

The Olympic festival, in fact, was the supreme realisation of the Hellenic ideal: perfection of physical development, joined to highest intellectual development and the finest development of the senses. It was an ideal that in-

volved the possible perfection of the whole man, a harmony of body, senses, and intellect—the Hellenic ideal of Beauty.

Olympia, wrote Lysias, is "the fairest spot on earth," and, surely, in the loveliness of its natural setting, in the embellishments which the architect and sculptor had added, in the glory of the youthful vigour of the competitors and the inspiration of poets and musicians, and, not least, in the joyous enthusiasm of the spectators was realised, as perhaps nowhere else at any time, the Beauty of Life; the idea, as Plato taught, that the Good is the Beautiful, the Beautiful the Good.

Such was the Hellenic ideal. And an ideal, need one add, is not an aim that is actually achieved but one beyond our capacity to achieve wholly, that yet gives continuous incentive to higher and nobler effort. This ideal of the possible perfection of man in all his parts is the highest to which man has ever aspired and the Hellenes of the Great Age came the nearest to achieving it. Hence their example has become to succeeding ages Classic.

Having this ideal, the Hellenes translated it as far as possible into visible form. No athlete could compete at Olympia unless his body and his character were free from blemish; no statue or temple must be erected except as the finest possible expression of organic perfection.

For the beauty involved in the Hellenic ideal is organic beauty. Everything about Olympia, as everything about a Hellenic Temple, must perform its function in the organic beauty of the whole.

Further, it is to be noted that in the pursuit of this ideal the Greeks did not rely upon the feeling of the senses, nor yet upon the judgment of the intellect; but upon a union of the two. They submitted the inspira-

tion of the senses to processes of reason. In a word, they intellectualised their sensations. It is this which has made the expression of their ideal Classic.

It is not necessary for our present purpose to trace the ebb and flow of the influence of this ideal through the centuries. But we may observe that while the Romans despoiled Hellas of her works of art and imitated, as far as they could, the externals of her ideal of beauty, the Arabs, Moors, and Saracens in later years more intimately imbibed its spirit and gave their own expression to it. Italy, however, in the latter half of the fifteenth century and during the sixteenth, came nearer than any other nation to both the spirit and the form of Hellenic culure. For her scholars and artists were more inclined to emulate than to imitate the example of the Greeks and tried to incorporate the Hellenic ideal into their own lives.

On the other hand, the Classical revival which began toward the end of the eighteenth century and has continued intermittently to our own day, has for the most part made the mistake of imitating instead of emulating. Artists have tried to copy the form, without imbibing the spirit. But form so used is like the letter that killeth; without the spirit that giveth life.

Meanwhile, there are indications that the world to-day is going to approach nearer to the Hellenic ideal than ever before and in some respects to better it. For there was a flaw in the latter. It despised labour and denied workmen a share in government. Its democracy was merely an extended aristocracy and, since those privileged to share in it received payment while filling office, it has been said that "the majority of the Athenian citizens were salaried paupers." On the other hand, the theory,

at least, of modern society is the honourableness of labour, and one of the best recognised problems of to-day is the shaping of conditions in order that labour may in truth be honourable—a blessing and not a curse, enhancing the beauty of the worker's life instead of starving it. In fact, the modern world in adopting anew the Hellenic ideal of the beauty of the whole life is going to carry it further, to include the whole life of the whole community.

Moreover, our hope in being able to revive the Hellenic ideal and even to carry it farther consists in the fact that the foundation of our progress, as of the Greek, has again become reason, and reason established on a wider and firmer basis, owing to the immense development of modern science. And, while science encompasses every field of human thought and activity, its tendency is more and more directed to promoting the health and happiness of life. It is aiming anew at the Hellenic ideal of physical, moral and mental perfection, not confined to a few, but embracing whole communities and peoples.

There was a further flaw in the Hellenic system. It relegated women to an inactive position in the public affairs of life. Women were excluded even as sight-seers from the Olympic Games. The Greek worshipped the physical in woman, but refused development of her intellectual faculties. Their ideal was, in fact, centred in a single sex; it could not breed and perpetuate itself. But to-day the idea is spreading that this is a woman's as well as a man's world, and that to approximate to the ideal of human perfection needs the full, free, and independent co-operation of the woman and the man.

In conclusion let us note how in one respect the Hellenic ideal still transcends our own. There was a logic in the

Greek, to which we have hardly yet attained. It practically amounted to this that "a tree is known by its fruits." If a thing is good physically, morally, and mentally, it must naturally manifest its goodness so that it can be appreciated by the senses. Beauty must be made visible and audible. The possibility of the ideal must be made familiar to all, in literature, song, dance, drama, and the arts of beautiful design.

To the Greeks æsthetics, the study of what is appreciated as beautiful by the senses, was not a separate department of life, as it is apt to be with us, but only another aspect of morality and religion. It was the natural and inevitable expression of the inward spirit of the ideal. How could a man's life reach its highest possibility if it did not love and seek after beauty; how could a city be truly great unless it were manifestly beautiful?

One can hardly imagine a Hellen, who wished to retain any reputation for intelligence, asserting, as many people are satisfied and even seem proud to do in these days: "I don't know anything about art, but I know what I like." To this it is on record that an artist retorted, "And so does a cow." Which would have been the sort of retort that a Hellen might have made to the speaker, whom he would at once determine was a person of low intelligence.

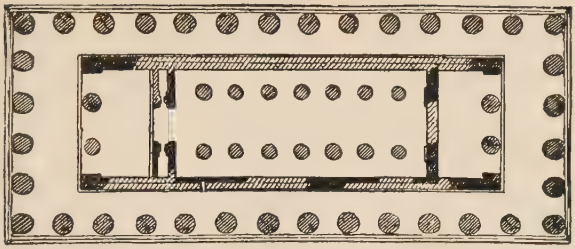
For Greek art, as we have already said, was not an expression solely of the senses; but of the sensations guided by the intellect; and it was just as much a part of a Greek's intellectual training to know and understand and feel—in a word, appreciate—art, as it was to fit himself for other services to the State. Yet, do not forget it, the Hellenes were a race of traders and manufacturers, like the backbone of our communities to-day.

CHAPTER II

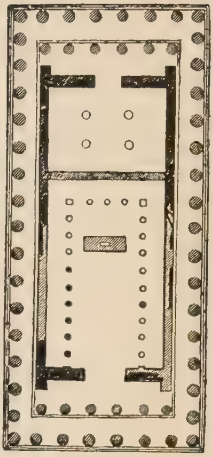
HELLENIC ARCHITECTURE

We have noted in the previous chapter that Hellenic art, like Hellenic culture generally, was a product of the senses guided by the intellect—the expression of intellectualised sensations. To his crude sensations the artist applied very much the same process that the modern scientist has applied to crude oil, until, through experiments guided by observation and reasoning, he has developed refined oil, which gives the purest and intensest possible illumination. Thus the Hellenic artists, through generations, refined upon the forms of their architecture, to create a unity, distinguished by fitness, proportion, harmony and rhythm, until they brought it to the highest degree of expressional capacity; appealing alike to feeling and to reason. It reached its highest expression in the temple, the supreme monument of the community's civic consciousness.

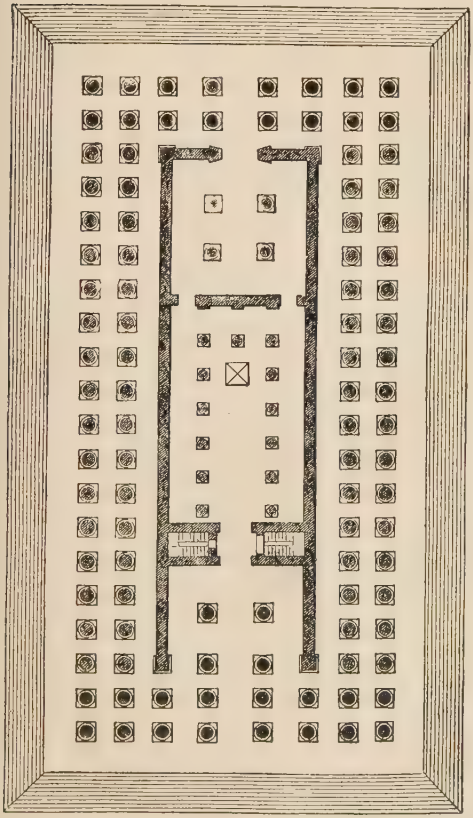
The developed form of the Hellenic Temple resembled the Egyptian in being a product of the "post and beam" principle of construction; but differed in its purpose that the outside rather than the inside should present superior dignity of design. The chief feature of the latter was the Order, as it is called in Hellenic and Roman architecture, or combination of columns and entablature. It might be confined to a portico at the entrance or supplemented by another portico in the rear, or still further extended by a colonnade that surrounded all



Temple of Poseidon, Paestum. Hexastyle-Peripteral

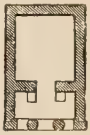


Parthenon. Octostyle-Peripteral

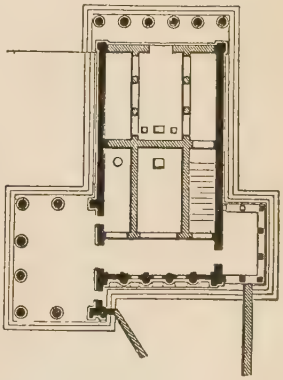


Temple of Jupiter Olympus, Athens. Octostyle-Dipteral

Temple of Apollo, Bassæ

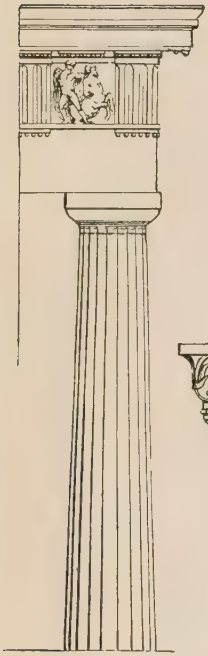


Distyle in Antis

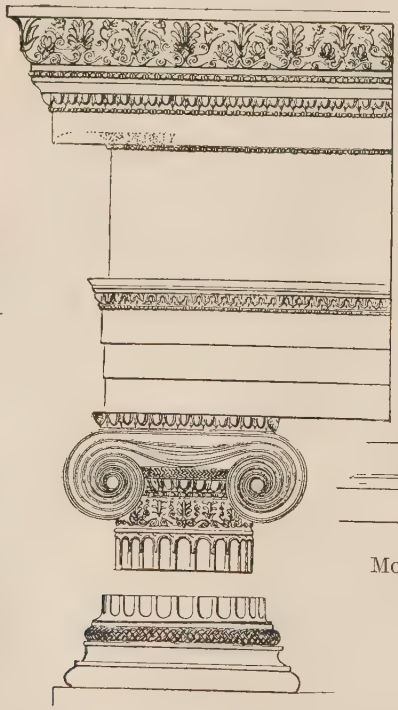


Erechtheion. At the Left Is the "North Porch" of the Caryatides

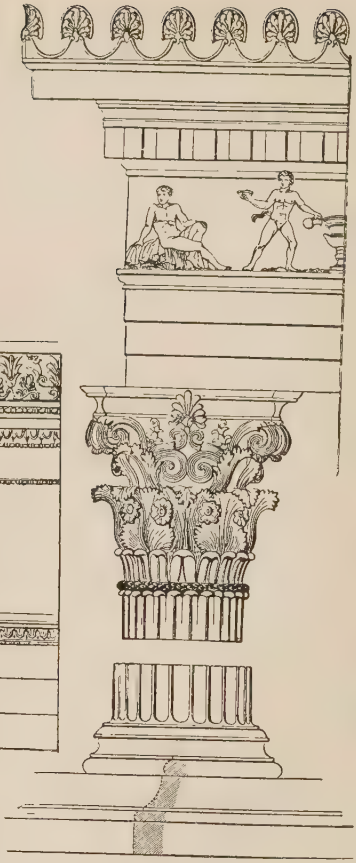
SOME TEMPLE PLANS



Doric Order



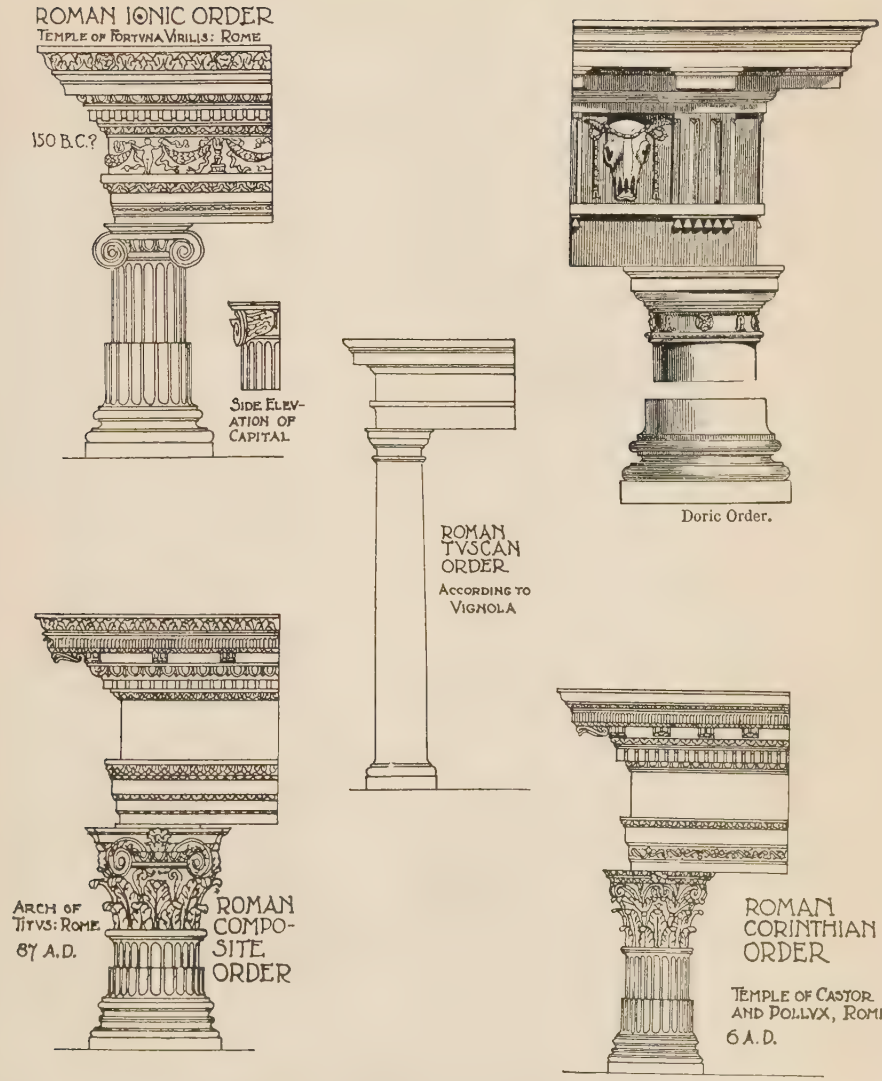
Ionic Order



Corinthian Order
Monument of Lysicrates

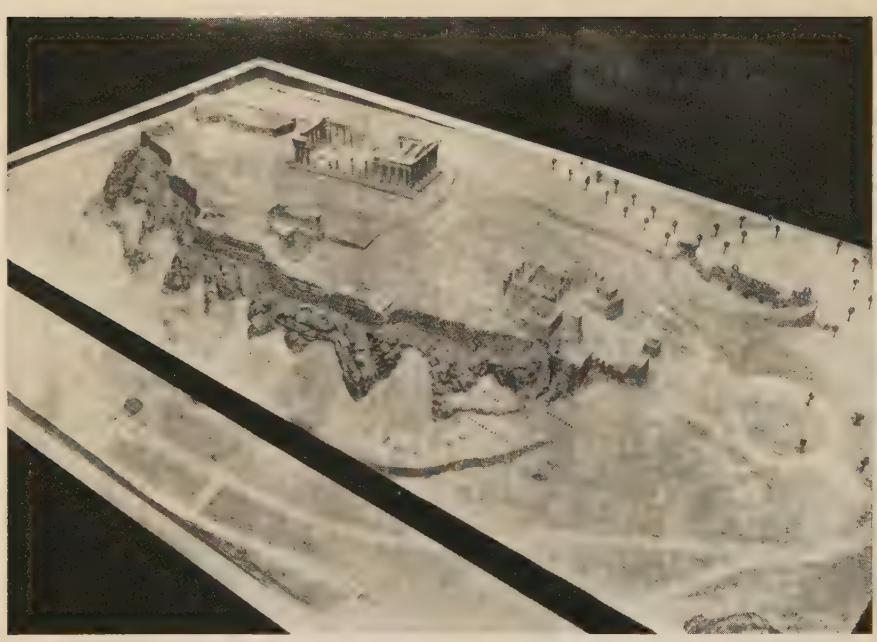
HELLENIC ORDERS

(Columns and Entablatures.) Pp. 123, et seq.



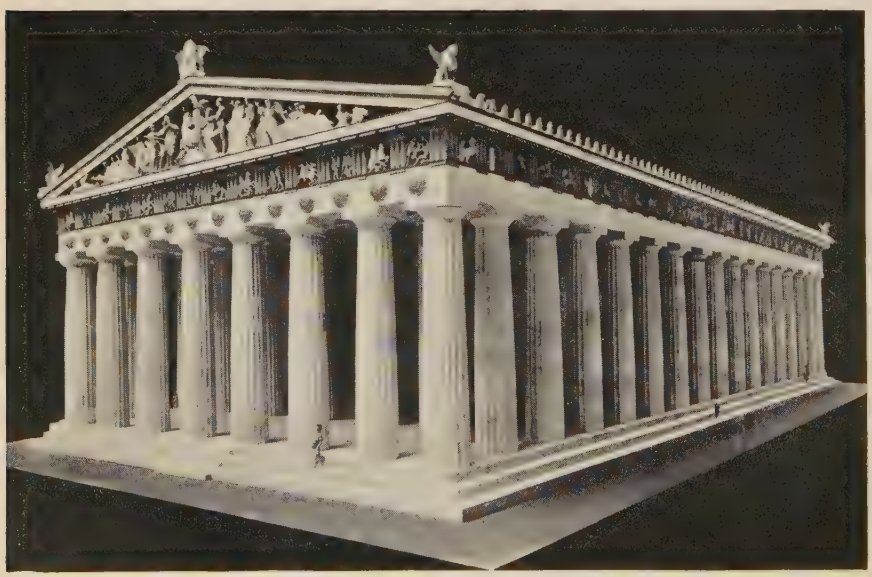
ROMAN ORDERS

(Columns and Entablatures.) P. 163



MODEL OF THE ACROPOLIS

(Right) Roman Gateway at Propylæa; (Left) Erechtheion. Adjoining Remains of Early Temple of Athenæ; Beyond Is the Parthenon; Back of the Latter, Temple of Rome and Augustus



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MODEL OF THE PARTHENON

(Restored)

THE PARTHENON

P. 140, ETC.

TEMPLES AT PÆSTUM

POSEIDON, AT THE RIGHT. P. 125

CHORAGIC MONUMENT
Of Lysicrates, Athens. P. 131

TEMPLE OF NIKE APTEROS
Athens, "Wingless." Notice Looping Fillets in Capitals. P. 141

PORTICO OF THE CARYATIDES. ERECHTHEION
Ionic Architrave and Cornice; no Frieze. P. 141

DETAIL OF ORNAMENT

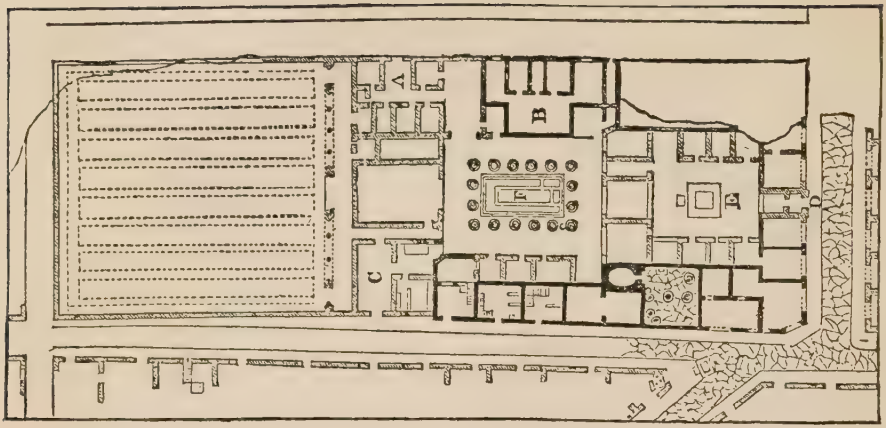
In Order from Below: Anthemion, Bead-and-Spool, Egg-and-Dart, Bead-and-Spool, Heart-Leaf. P. 132

STATUES IN THE ROUND OF PERSEPHONE AND DEMETER

From the East Pediment of the Parthenon. P. 135

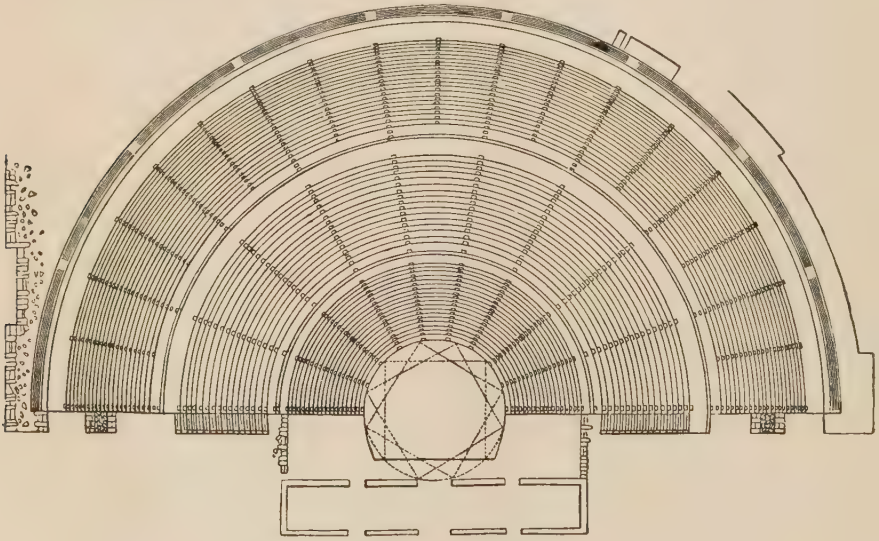
FIGURES IN HIGH RELIEF

From the Procession of Worshipers, Frieze of the Parthenon. P. 135



PLAN OF HOUSE OF PANSA, POMPEII

Entrance from R. Leading to E. the Atrium, with Impluvium in the Center. F. Peristyle Enclosing a Small Garden or Fish Pond. B. Living Rooms, Triclinium to the Right. C. Kitchen Quarters. Sleeping Apartments A. and Opening on the Courts. Plan Ends on Left with Portico, Opening onto Garden. P. 181



PLAN OF THEATRE OF DRAMYSSUS

One Hundred Feet to One Inch

four sides of the *cella* or *domos,* house of the god, in which case it is called a *peristyle.*

The emphasis of the order as a constructive and decorative feature has been traced back by some students to the Dorian people's primitive custom of worshipping in groves. The religious ceremonies, which included a procession of the worshippers, would be conducted amid the trees surrounding the altar or shrine, and in time a roofing of cross pieces thatched with boughs may have been attached to the trees. Accordingly, those who adopt this view suggest that when the use of a grove was succeeded by a constructed temple, the original feature was the peristyle. And possibly there is a commemoration of this in the peristyle of the Parthenon, where a procession of worshippers of the goddess is represented in the sculptured frieze that embellishes the outside of the walls of the cella—thus embodying in the most highly developed form of Hellenic temple its origin in primitive religion.

The character of the form seems to have originated in wood construction, certain features of which—to be referred to later—were retained after stone or marble was employed and were translated into details of decoration. The gradual transition to materials of construction, less at the mercy of fire, is hinted at by Pausanias, a Greek geographer and writer on art of the second century B. C., in his description of the **Heraion** or **Temple of Hera** (Juno) at **Olympia,** the oldest known example of a Doric Temple, attributed to 1000 B. C.

The cella wall, he says, was constructed of sun-dried bricks on a lower course of stonework, but the entablature was still of wood, covered with terra-cotta. One wooden column was still standing in the *opisthodomos,* but else-

where as the wooden columns decayed they had been replaced by stone ones; the design of their capitals showing that the work of restoration lasted from the sixth century to Roman times. The roof was covered with tiles. The cella was divided into a central *nave* and *side-aisles* by two rows of columns for the support of the roof, and the aisles were intersected by small screen walls; thus forming alcoves, corresponding to the side-chapels of a Gothic cathedral. In one of these alcoves German explorers in 1878 discovered the *Hermes* of Praxiteles, which is probably the only marble statue in existence that was actually wrought by the hands of one of the great sculptors.

Early Doric Examples.—The Dorian migration pushed down through Macedonia and Thessaly into the peninsula of Greece and spread through the islands of the Ægean as far as Crete, afterward planting colonies at **Pæstum** and other sites in Southern Italy and at **Syracuse, Selinus,** and **Agrigentum** in Sicily. Throughout all this wide area they carried their particular style of Order—the Doric. In developing it, they brought into play what has been judged their distinguishing trait of character—sense of proportion.

The earliest known examples of Doric temples, built originally of stone, are at **Corinth** and that of **Phœbus Apollo** on the island of **Ortygia,** at the entrance to the harbour of Syracuse. In these, which are attributed to the seventh century B. C., the columns are monoliths with widely projecting capitals, and set so close together that the intercolumniation was less than one diameter of the column. For the early Greeks appear to have been distrustful of the bearing capacity of stone as compared with wood.

Belonging to the sixth century are the colossal **Temples**

of Zeus at **Selinus** and **Agrigentum** and the **Temple of Poseidon** (Neptune) in **Pæstum.** In the last the columns are composed of sections or "drums," and there are still in position in the cella the smaller columns, superimposed on the main ones for the support of the roof.

The temples of the fifth century are distinguished by increased refinement in the matter of proportion and details and by superior skill and workmanship. They include the **Temple of Athene** (Minerva) on the island of **Ægina**; the so-called **Theseum**, supposed to have been dedicated to **Heracles** (Hercules), in **Athens**; and the **Temple of Zeus** which forms one of the group of temples at **Olympia.** It is the most complete temple-group yet discovered, and was the scene of the religious ceremonies in connection with the Pan-Hellenic Games.

With the second half of the fifth century began the supremacy of Athens in the affairs of Hellas under the rule of Pericles, which enabled her as custodian of the Hellenic treasury to undertake the beautifying of the Acropolis. This culminated in the **Parthenon**, the noblest example of the Doric style and, as Mr. A. D. F. Hamlin writes, "the most faultless in design and execution of all buildings erected by man."

Following, apparently, the tradition of worshipping in groves, the Dorians placed their temples in a *temenos*, or enclosure in which were other shrines, altars, and treasuries. Whether this temenos was on a hill-top, as in the case of the Acropolis in Athens and the site of the temple-group in **Agrigentum**, or in a valley on sloping ground as at **Delphi**, the irregularities of the ground were taken advantage of in the disposition of the buildings. Thus was created an ensemble in which art and nature united, while in the case of a level site, as at **Olympia**, **Delos**, and

Pæstum, the temples were grouped in picturesque irregularity.

Temple Plans.—The nucleus of the temple plan was the *naos,* containing the statue of the deity. Adjoining it were other chambers, connected with the ritual of worship; and this aggregate of naos and chambers, enclosed within walls, is known as the *Cella.*

It was approached from the front, which faced the *east,* by a covered, columned vestibule, open at the sides, called the *pronaos.* This was often repeated at the rear under the name of *epinaos,* or, as the Romans called it, *posticum.*

The pronaos was entered through a *portico.* When the latter was composed of columns, set between the prolonged sides of the cella, the type of plan was called *in antis.*

When the side-walls were not prolonged, but terminated in pilasters, known as *antæ,* and the supporting members of the front façade were solely columns, the type was called *prostylar* or *prostyle.*

If, under the same conditions the portico was repeated at the rear, the type was called *amphi-prostylar* or *amphi-prostyle.*

If the whole were surrounded by a colonnade or *peristyle* the type was *peripteral;* while if a second row of columns were added on each side, as in the great **Temple** of the **Olympian Zeus,** erected in Athens during the Roman occupation, the type was *dipteral.* The external aisle, formed by the colonnade on each side was known as the *pteroma.*

Where there was no peristyle, but columns, known as false or engaged, were built into the wall of the cella, the type was *pseudoperipteral.*

There are also to be mentioned the octagonal plan, as seen in the **Tower of the Winds** in **Athens**; the circular peripteral plan of the **Tholos** at **Epidauros** and the examples of irregular planning presented by the **Erechtheion** and **Propylæa.**

The type was further distinguished by the number of columns—four, six, eight, or ten—composing the portico, as, respectively, tetrastyle, hexastyle, octostyle, and decastyle.

Thus the **Parthenon** is *octostyle peripteral;* Temple of **Poseidon, Paestum,** hexastyle peripetral; of **Jupiter Olympios, Atucus,** *octostyle dipteral;* of **Apollo, Bassæ,** *in antis.*

Temple Form.—The cella, or chamber for the god, was built originally of wood; later of sunburnt bricks on a lower course of stonework, the whole being coated with a thin layer of stucco, as is found to have been the practice also in later Doric temples in Sicily and Italy, where the material was soft stone. To protect it from the damp of the ground as well as to dignify it, the cella was raised on a platform, approached by steps.

On the top of the walls was laid a framework of timber sills, crossed by transverse beams, on which stood posts to hold the ridge-piece, from which the rafters sloped to the sills, so that the roof which was of wood, covered with sunburnt brick and later by tiles, formed eaves to protect the cella from the roof-rain.

The next step to add dignity to the entrance would be to prolong the gable end in front and support it by posts, so as to form a porch or portico. At first the weight of this might be chiefly carried by an extension of the side walls. Then a superior effect of lightness and dignity would be given to the portico by omitting the support of the sides and substituting posts; while, for further em-

bellishment, a similar portico might be extended from the rear of the cella.

Then, in the search for dignity and also to give more protection from weather to the walls of the cella, the eaves of the roof would be further prolonged outward and made to rest on sills that were supported by a series of posts. In this way the cella was completely surrounded by a colonnade or peristyle.

As the use of stone or marble was adopted, the platform became the *stylobate,* which was approached by three steps, carried along the entire length of all the sides. The cella was built of marble or stucco-covered stone, and marble or stone took the place of the sills and beams of the roof, but the latter continued to be constructed of wood, supported by small columns resting on the capitals of larger ones. The outside sheathing of the roof was of terra-cotta or marble tiles. Unlike the roof of an Egyptian temple which was raised in the centre to admit clerestory windows, that of a Hellenic temple had an uninterrupted slope. Whence then was the light derived for the interior?

Lighting.—Since all roofs, being of wood, have perished, the explanations that have been attempted are purely conjectural. A remark by Vitruvius, the Roman architect and author of ten books on architecture, regarding the **Temple of Zeus** at **Athens** that it was *hypæthral* (open to the sky) has led to a suggestion that part of the roof may have been open, as in the case of the Pantheon in Rome. But, at the time he wrote, the cella was exposed because Sulla had carried off to Rome some of the supporting columns. Another Roman writer, Strabo, describes the decastyle **Temple of Apollo** near **Miletus** as hypæthral, but gives as the reason the enormous size of

the cella, in which precious groves of laurel bushes grew. So, it is purely a surmise that the portion of the roof may have been omitted and that the temples were hypæthral.

Another theory, founded upon the discovery in a temple at **Bassæ** of three marble tiles, or thin slabs, pierced with holes about 18 inches by 10, is that some five of these, let into each side of the roof, would have lighted the interior amply without admitting much rain. Again, the use of marble tiles has afforded a suggestion that, Parian marble being very translucent, the light might have penetrated through. James Fergusson, on the other hand, conjectured that a trench was let into each side of the roof; but this would have needed drains to carry off the water and no sign of a system of drainage has been found in any temple. Other authorities, however, maintain that it was only through the open doorway that light was admitted, which owing to the clear atmosphere of Greece and the reflection from the marble pavement, would be sufficient.

The Orders.—In Hellenic architecture there are two fully developed Orders—or combinations of Columns and Entablature—the Doric and the Ionic. To these are usually added a third, the Corinthian, which, however, though invented by the Hellenic artists, did not receive its full development as an independent order until employed by the Romans. The principal members of the classic column are the *capital, shaft,* and, except in the Doric order where the shaft was set directly on the stylobate, the *base.*

Doric Column.—It is possible that the Dorians took the character of their column originally from the example of Minoan architecture. For in a fresco at Cnos-

sos appear the façades of three temples with columns, and the representation of the latter corresponds with the facts discovered in the actual remains of the palace. The columns are of wood, and have no base, since the shaft is let into a socket in the masonry. It is crowned by a *torus,* or circular cushion with a half-round edge, on which rests a square block, the *abacus.* The shaft differs in one respect, it narrows downward; whereas all Hellenic columns taper upward. The reason assigned for the Cretan practice is that the tree-trunk was inverted so that it might retain the sap.

All these features are reproduced in stone in the columns of the doorway of the **Tomb of Atreus** at **Mycenæ,** which has been already mentioned. The shafts of these columns are decorated with *chevrons,* whereas the Greeks in their best examples never decorated the shaft, nor, in fact, any other part of the structure that carried the chief strains.

Upon this crude type the Dorian architects continually improved until they had evolved an order of the most subtle refinement. In the earlier examples the diminution upward of the shaft is more pronounced than in the Parthenon, where the diameter at the bottom is 6 feet 3 inches and at the top 4 feet 9 inches, which gives a diminution of slightly over one quarter of the lower diameter. The shaft, except in one or two temples that were not completed, was always fluted. The flutes usually numbered twenty, and were elliptic in section, meeting in a sharp edge or arris, thus differing from the flat-edged fillet that separated the flutings of the Ionic and Corinthian. In order to correct the optical illusion, suggested in a diminishing shaft, that the contours are concave, they were made slightly convex, the swell of this

entasis, as the convex is called, being greatest at about one-third of the distance from the bottom.

As the shaft nears the capital, it is encircled by a narrow groove or *annula.* At the top of the shaft is a series of annulæ, some of which are cut in the shaft and others in the lower member of the capital, the *echinus,* so that the shaft appears to project in a necking, into which the capital is set. The *echinus* is a circular cushion with an eccentric curve; a curve, that is to say, that is not part of a circle. (Compare by contrast the semi-circular curve of the *torus.*) Upon the echinus sets firmly the *abacus,* a square block with a side measurement the same as the diameter of the echinus.

The height of the column varied in its proportion to the lower diameter. In the **Temple of Poseidon,** at **Pæstum,** the height is four times the diameter; in the later example of the **Parthenon** nearly five and a half times, while in the **Temple of Jupiter Nemæus** it is six and a half times.

The *intercolumniation,* or space between the columns, also varies. In the older temples it was about one diameter of the column, the space between the angle columns being always less; while in the case of the Parthenon the distance varies from one diameter to 1.24; this being an instance of deviation from geometrical regularity to be referred to later.

It remains to mention the *antæ.* These were flat, right-angled columns, projecting slightly from the wall of the pronaos at the corners, facing the end columns. While they correspond to the latter, they differ in three respects. The shaft did not taper and was set on a small base, while the capital was distinguished by different mouldings. For the mouldings suitable to a free-stand-

ing column, supporting actual weight were felt to be unsuited for a member attached to a wall, whose functions were decorative.

Doric Entablature.—The principal members of the entablature are the *architrave* or supporting member, the *frieze* or decorative member, and the *cornice* or protecting member.

The *architrave,* as its name implies, "the chief beam" of the entablature, rests immediately upon the abacus; its edge corresponding neither with that of the abacus nor with the top edge of the shaft, but so adjusted to both as to ensure a feeling of complete stability. The architrave was usually plain[1] and crowned with a projecting fillet, called the *tænia,* which beneath the *triglyphs,* is supplemented by a lower fillet, known as the *regula.* On the under side of the latter were six studs, which recall perhaps the wooden pegs with which the ends of the beams in primitive construction were fastened.

The *frieze* is a vertical surface, composed alternately of triglyphs and metopes. The *triglyphs,* so called because they are divided into three vertical channels, represent the ends of the primitive longitudinal sills of the cella roof; and a recollection of the woodworker's craft was still preserved in the chamfer or hollow of their outer edges. The function of the triglyphs was to support the cornice. Generally they were set above and between the columns, but at each end of the entablature one adjoins the corner, thereby increasing the effect of stability.

The space between the triglyphs, called the *metope,* was originally left open, except for a wooden shutter to

[1] An exception occurs in a temple at Assos, where the architrave is decorated.

keep out birds. But in the most elaborate examples of later date the metope was decorated with sculpture in high relief. Those of the Parthenon contained groups, representing fights with Centaurs, Amazons, and Trojans.

Above the frieze was the cornice, which, as a protection from the drip of the roof, projected to a distance, about one-third of the diameter of a column. Its chief members were a vertical band, known as the *corona,* and an underpart, the *soffit.* The latter sloped down under the corona at about the same angle as the slope of the roof, and was decorated above each triglyph and metope with a *mutule* or square block, studded with eighteen *guttae,* or drops, a device that recalls the method of making fast the ends of the rafters with wooden pegs.

The cornice was carried up the two sloping edges of the roof, but here distinguished by an additional feature, the *cymatium* or gutter. The triangle or gable thus formed by the three cornices was called the *pediment.* It was embellished at the top and ends with small pedestals, *acroteria,* on which stood figures or conventional ornaments.

In a Doric temple the corona, on the sides of the building was without a cymatium, but studded instead with *ante-fixae,* ornaments of terra-cotta or marble, placed opposite the end of each tile-ridge of the roof. The latter, as we have already noted, was covered with tiles of marble or terra-cotta, and finished at the top with ridge-tiles.

The mere reading of these details is dry enough. They should be read with an eye on the examples illustrated but also with a mind constantly alert to think out the function and appropriateness of each feature. For the

principle of Hellenic construction was that every member should perform a special function. The architect's logic would not permit him, as we say, to send a boy on a man's errand or waste a man by employing him at boy's work, still less to confuse the responsibility for the function between two or more members. Accordingly, the student who is reading intelligently will assure himself at each step as to what particular responsibility was laid upon each member and how appropriately it was fitted to its function.

Ionic Order.—From the grandiose simplicity of the Doric order we pass to the slenderer and more graceful and decorated order of the Ionic. It is almost like passing from a masculine to a feminine type: from a reflection of the severe discipline of the old Dorian, as perpetuated by the Spartans, to the more pleasure-loving and elegant life of the wealthy Ionians; from the grave influence of the Olympian Zeus, chief god of the Dorians, to the grace of the youthful Apollo and Artemis, beloved of the Ionians.

For the Ionic order, as the name implies, was developed by the Asiatic Hellenes whose migration from Armenia has been already noted. From them the Greeks of Europe borrowed it. Among the earliest known examples are a **Temple of Apollo** at **Naucratis,** in Egypt, and the archaic **Temple of Artemis,** at **Ephesus,** both belonging to about 560 B. C. The remains of the latter are in the British Museum. They include two capitals, inscribed with the name of Crœsus, who is known to have contributed to the temple.

As in the Doric order, the Ionic temple rested on a *stylobate* of three steps, but the column is also provided with a base. The latter was usually composed of two

tori, of semi-circular profile, separated by a concave moulding or *scotia.* Sometimes, as in the **Erechtheion** at Athens, the base stood upon a square, flat base-block, or *plinth.* Frequently the tori were embellished with horizontal flutings or the interlacing wave-lines, called *guilloche.*

The Ionic shaft was proportionately higher than the Doric, being from 8 to 10 diameters in height as compared with the 4⅛ to 7 of the Doric. Consequently, the entasis was less. The intercolumniation was sometimes as much as two diameters. The shaft was incised with twenty-four narrow flutings, separated by flat-edged fillets.

The capital usually commenced with a narrow convex moulding, called the *astragal,* which was often enriched with the alternate bead and spool ornament. Above this was the *echinus,* decorated with the egg-and-dart pattern. But the *echinus* is only partly visible, since it is encroached upon by the main feature of the capital, a fillet that passes across the face and at the sides winds inward upon itself, forming a *volute,* which projects beyond the *echinus.* Above this was a low *abacus,* enriched with ornament, on which set the *architrave.*

In some instances, as in the **Erechtheion**, the fillet forms a looping curve, the volute is enriched with intermediate fillets and the necking is decorated with the *anthemion* ornament.

The Ionic capital presented awkward features which the ingenuity of the architects never quite succeeded in disguising. In the first place the abacus projected beyond the face of the architrave which from the side view offered an unsightly appearance. Secondly arose the problem of treating the volutes of the corner col-

umns, so that the effect might be symmetrical on both sides of the building. This was solved by converting the side end of the capital into another face, the adjacent volutes at the corner being brought out at an angle of forty-five degrees. This results in an awkward arrangement at the back where two half-volutes intersect each other at right angles.

The Ionic architrave consists of two or more *fasciæ,* or vertical faces, projecting one over the other. This recalls the original wooden construction and suggests that the Ionians used planks, while the Dorians used a single beam. It was crowned with small mouldings, frequently enriched with ornament.

Above this was the frieze, sometimes left plain, at other times enriched with sculptured reliefs. It was joined by a moulding to the cornice.

The latter, in the simpler form adopted by the Athenians, consisted of a plain corona, a fillet of *bead-and-spool* ornament, a row of *egg-and-dart* moulding, and the cymatium or gutter, which was often embellished with lion heads.

In Asiatic-Ionic examples, however, the cornice was more elaborate: a row of narrow blocks or *dentils,* crowned with a carved fillet, being inserted beneath the corona, while, further, the cymatium was embellished with a repeat of the *anthemion* decoration. This style is distinguished by the term Ornamented Ionic.

The origin of the dentil may probably be traced to the Lycian Tombs, where they are represented by the ends of the beams of the roof or gable. The volute appears as a decorative feature on the façade of the so-called **Tomb of Midas** in **Phrygia.** It also occurs as a decorative feature in Assyrian art and is found in the capitals of the

small columns of a pavilion represented in the reliefs at Khorsabad. The motive of the spiral is also found in Mycenæan jewelry. Professor William H. Goodyear in his "Grammar of the Lotus," suggests that the volute may have originated in successive variations of the Egyptian lotus patterns.

The Doric and Ionic orders were sometimes combined in the same building, as in the **Propylæa.**

Corinthian Order.—The Corinthian order represents a still further advance in ornateness, which however by the Hellenic architects was confined to the capital of the column. For the base and shaft of the columns and the entablature followed the Ionic order. The embellishment of the capital may have been derived from the old custom of attaching metal ornaments or actual foliage to altars and pedestals; and it may be possible to trace the growth of the Corinthian style from the Ionic in the repeat of palmettes that occurs below the volutes in the capitals of the east portico of the **Erechtheion.** On the other hand, the general bell-form of the capital may have been derived from Egyptian lotus capitals.

The Corinthian order was used by the Athenians only in their smaller structures [1] and reached its most refined form in the **Choragic Monument** of **Lysicrates** in **Athens.** Here the flutings of the shaft terminate at the top in leaves that curve outward. Above them is a band that may have been covered with a bronze collar, from which spring a row of small lotus leaves. Then come eight beautiful acanthus leaves, between each of which is an eight-petalled rosette, suggesting a lotus-flower. They

[1] It was sometimes used in connection with the Doric order, as in the case of the **Tholos at Epidauros,** where the internal circle of columns is of the Corinthian order.

are surmounted at the corners by stalks of the acanthus, partly sheathed with leaves, that turn over with a spiral and form scrolls to support the abacus. The latter in the Corinthian order has concave sides.

The details vary so much in Hellenic examples of Corinthian capitals that, as we have already noted, the type had not yet been developed into an independent order. Its final development was worked out by the Romans, to whom its magnificence especially appealed.

Ornament.—The *acanthus* plant belongs to Southern Europe and the warmer parts of Asia and Africa. The common species found throughout the Mediterranean, has large, deeply cut, hairy leaves. As a decorative motive the Greeks first reproduced it in metal and then carved it in stone, using it with particularly fine effect on the upright form of tombstone known as *stela.* While they conventionalised the leaves, they preserved the character of vigorous and at the same time graceful growth. They gave a sharpness to the tips of the leaves that distinguishes their use of it from the Roman.

The *anthemion* ornament is often called the "honeysuckle pattern" from its resemblance to that flower. But it is supposed to be a conventionalisation of the flower of the acanthus, while related as a decorative motive with the forms of the Egyptian lotus and the Persian palmette.

The *egg-and-dart* border presents a repeat in which the form of an egg, set in a concave oval, alternates with a vertical bar that may or may not terminate below in a more or less pronounced arrow-tip. It permits the most subtle treatment of the planes of the egg, and of the contrast between the smooth surfaces and the sharpness of the other details.

The *bead-and-spool* repeat explains itself. It shows

a variation, according as the conventionalisation was derived from a spool that is wound or that is unwound.

The *heart-leaf,* also sometimes called the *lily-leaf,* is a remarkable instance of the closeness with which the Greek artist studied nature and of the imagination he displayed in simplifying the natural form into a convention, while at the same time preserving the principles of its construction.

Projections.—Unlike Egyptian architecture, the Hellenic is distinguished by the number and importance of its projections; which may be compared to the lines, angles, and curves which constitute the features of a human face and give it expression. They are the means by which the architect engraves upon his buildings expressive designs of light and shade. We have already spoken of the projections involved in the column and entablature, but may now specifically enumerate the various types of moulding that these involve; noting at the same time the particular ornament that was employed on each, if it were decorated. For such was the logic and refinement of the Hellenic taste that it adopted motives of ornament that corresponded to the planes of the surfaces of the moulding.

Thus, when the moulding took the form of the *cyma recta*—a curve outward growing into a curve inward—Hogarth's "line of beauty"—the decorative feature applied to it was the anthemion, whose curves have a corresponding direction. On the other hand, for the reversed form of moulding, known as the *cyma reversa* where the inward precedes the outward curve, they used the heart-leaf. Again, the moulding known as *ovolo,* in which the contour of an egg is followed, is enriched with the egg-and-dart.

The *fillet,* a small band used to separate the other mouldings, was usually left plain; as also were the simple hollow, called *cavetto,* and the deep hollow which separated the two *tori* in the base of columns. When the torus was embellished, the motives used on the semicircular surface were the interweave or plait, known as guilloche, or rows of leaves, tied with bands, so that the moulding resembled a wreath. Another small, separating moulding was the *bead,* which in contour approaches a circle, and, when decorated, received the bead-and-spool enrichment.

The distinction of the Hellenic use of all these mouldings and enrichments was the extreme delicacy of the cutting, which the hardness of the marble permitted and the clear sunshine helped to reveal; so that it has been said that "while the Hellenes built like Titans, they finished like jewellers." But this did not involve a finicking precision, for it was but an instance of the feeling for proportion and choice relation of parts to one another that embraced the whole building.

Organic Relations.—The height of the building was thoughtfully proportioned to the length and width; the height of the shaft of the column was considered in relation to the diameter. Similar care was expended on the proportions of the several members of the capitals and entablature, and the intercolumniation bore relation to the lower diameter of the shafts. In every particular, great or little, the effort was to create a unified impression of organic harmony and rhythmical relations.

Now the term organic is primarily used of the living bodies of animals and plants, the parts of which are not only connected but perform certain functions in relation to the well-being of the whole. And it is an extension of

this idea that the Hellenes applied to the geometrical harmony on which their architecture was based. They considered the functions of each part—the amount of support it gave or strain it had to sustain and so forth; and having made provision for this as constructors, they were consistent to the principle also in their æsthetic consideration as artists. They modified the sculptural decoration according to the function of the parts; giving least to those whose function of support was most important and increasing the quantity and the boldness of the curving as the structural strain diminished.

Thus the shaft of the column was free of any carving except the fluting, which, however, served the purpose of channels to carry the rain water and helped to preserve the mass from decay. The capital in the Doric style was not enriched with ornament, and similarly plain, with very few exceptions, was the architrave. Meanwhile, sculptured figures in high relief were introduced into the metopes which originally had been openings, while the *tympanum* or flat surface of the pediment received groups of figures in the round. This increased boldness of relief, accompanied by foreshortening of the figures, was adopted to offset the diminishing effect that their greater distance from the spectator's eye would otherwise have suggested. Moreover, in the sculptures, as in the carving of the mouldings, the varying quantities of light were considered. The mouldings on the outside of a temple in full sunlight were differently planned from those in the interior; and the shadow cast by the cornices was taken into account in graduating the relief of the sculptures in the metopes and pediments.

Nor was the actual work done by artists, but under their supervision by pupils and masons. From the rec-

ords of payments made to the sculptors who worked on the Erechtheion it appears that they were ordinary masons, some of them not even citizens, who were paid for each figure the sum of 60 drachms, or 12 dollars!

Finally, the decoration of a Greek Temple comprised not only sculpture, but also painting. A large part of every Doric temple was covered with strong, bright colours, while certain prominent details were treated with elaborate patterns. The figures of the sculpture also were painted and relieved against a background of contrasted colour.

It has been discovered that the triglyphs were painted blue and the metopes red and that the mouldings were decorated with ornament in red, blue, green, and gold. The walls and the columns were probably stained yellow or buff, perhaps by the use of wax melted on the surface (*encaustic*).

Asymmetries or Refinements.—It might seem that, in the various particulars we have noted, Hellenic intellect and feeling had exhausted the possibilities of refinement. But there is yet another instance, which was first revealed by the detailed measurements of Hellenic temples made independently by two Englishmen, Francis Cranmer Penrose and John Pennethorne, and by a German architect, Joseph Hoffer. The results were published in 1838 and in 1851, and have been corroborated by other students. They are known as architectural "refinements" or "asymmetries."

It had been assumed that, since the form of the temple type was apparently symmetrical, it also involved absolute symmetry of details; that geometrical regularity and mathematical accuracy were the necessary and natural conditions of the architectural design. By those investi-

gators, however, it was discovered that though the principles of geometry and mathematics were the foundation of the planning and designing, regularity and accuracy were purposely avoided; and that so far from the details being symmetrical they exhibit intentional asymmetries.

One of these irregularities is the substitution of curved for straight lines. We have already mentioned the entasis or swell in the vertical contour of the column—a fact not observed by modern architects until 1810; but curvature is also found in the horizontal lines of the stylobate and the architrave, frieze, and cornice, and in the gable lines of the pediments. And since these were discovered other variations of equal importance and significance have been found.

"In the **Parthenon**, for instance," (the quotation is from the writings of Professor William H. Goodyear) "surfaces or members which are set true to perpendicular are most exceptional. Perhaps the end walls are the only exception. All the columns lean inward about three inches in thirty feet toward the centre of the building. The side walls lean inward. The antæ, or flat pilasters at the angles of the ends of the walls, lean forward one unit in eighty-two units. The faces of the architrave and frieze lean backward, whereas the acroteria, the face of the cornice and the face of the fillet between architrave and frieze lean forward. Furthermore, the columns and capitals of the Parthenon are of unequal size, and the widths of the metopes and the intercolumnar spacings are also unequal."

The discovery of these variations was pooh-poohed by architects who had been trained to believe that "correct" architecture depended upon geometrical regularity and mathematical accuracy. They dismissed them lightly as

"mason's errors." But this will not hold for three reasons. Firstly, these asymmetries only occur in the finest examples, where the design and the details are of superior refinement and the skill of the masons most unmistakable. Secondly, the number of variations increases *pro rata* with the superiority of the design, reaching their maximum in the **Parthenon.** And, thirdly, in cases which are unquestionably due to mason's errors the amount of the variation is practically negligible. Is it likely, for example, that the masons who brought the two ends of the Parthenon within one quarter of an inch of being exactly equal in width, would have been so careless as to let the presumably horizontal lines curve up four inches on the sides of the buildings and two inches at its ends? Or, again, would they have committed so flagrant an error as giving the stylobate a convex curve upward, since it necessitated a corresponding curve to the base of each column, a most difficult and delicate operation of cutting? The perfect adjustment of these two curves, by the way, is one of many arguments against the theory that these variations were caused by settlements in the foundations or, in the case of the Parthenon, by the explosion which wrecked it in 1687, when it was being used by the Turks as a powder magazine.

The fact having been established that these variations were intentional, how are they to be explained? A generally accepted explanation of the curvatures in place of straight lines has been that they were intended to correct an optical effect of curvature in the opposite direction. Thus, if the contour of a column shaft were a straight line, it would appear to the eye to curve inward; similarly, the horizontal lines of the stylobate and entablature would appear to sag downward. Accordingly, the "re-

finements" were designed as optical corrections of optical effects of irregularity; in other words, geometrical effect is supposed to have been sought by departures from geometric fact.

This, however, would not explain the other variations that have been noted. Moreover, it is contradicted even in the case of curvatures by a discovery of Professor Giovannoni of Rome, that the façade of the **Temple** at **Uri** has a curvature in *plan*.[1] The columns, that is to say, are not set to a straight line but to a curve which is concave to the exterior; consequently the entablature is correspondingly curved, the effect of which to the eye as it looks up is the very one that it was explained the architects strove to avoid—a sag downward from the ends. In this case they deliberately designed the façade to produce the effect.

This explanation of optical corrections, then, as well as others, have been proved erroneous by Professor William H. Goodyear, who has made a life-long study of the subject and carried his investigations also into Gothic architecture, in which, as we shall see, he has discovered numerous instances of refinements and asymmetries. His explanation, supported by a wealth of conclusive evidence which is set forth in his "Greek Refinements," is that the motive was æsthetic. The refinements were modulations designed to please the eye by avoiding the inartistic effects produced by formal monotony. They were planned to do away with the monotony and rigidity that result from geometrical regularity and mathematical accuracy and to introduce a suggestion of elasticity. They imparted to the structure something of the irregu-

[1] A corresponding curvature in plan has also been discovered in Egyptian architecture, for example, in the **Second Temple Court at Medinct Abou.**

larity that characterises organic growth. It is because, with rare exceptions, they are not found in modern classical buildings, that the latter appear by comparison so stiff and formal.

These asymmetries, in fact, were intended to offset the liability of the beauty's becoming "faultily faultless, icily regular, splendidly null, dead perfection, no more."

With few exceptions the Hellenic temple was oriented; its four sides facing exactly the four points of the compass, the principal entrance being on the east. It opened into the cella which was usually divided into what may be called a nave and side aisles by two rows of columns which carried smaller columns that supported the pitch of the roof. Where the cella was narrow, as in the **Temple of Apollo Epicurios** ("The Helper") at **Bassæ**, near Phigaleia, the rows of columns were replaced by half-columns, attached to projections from side walls. The cella was occupied by the statue of the deity, which in the case of the **Parthenon** was the Athene Parthenos, the Maiden Athene, one of the most renowned works of Phidias. The draped figure of the goddess was represented standing, armed with helmet, spear and shield, supporting in one hand a Wingèd Victory. The statue was about forty feet high and of the kind known as "chryselephantine," the draperies and accessories being of gold plates, the flesh parts ivory, with precious stones inserted in the eyes.

Behind this statue was the entrance to a small room, situated between the cella and the opisthodomos, an exceptional feature from which the name of the temple was derived. It was the Parthenon proper, or Virgin's

Chamber, which seems to have been used as a treasury. Its ceiling was supported by four Ionic columns.

The Ionic order in conjunction with the Doric was also employed in the **Propylæa** or monumental gateway of the **Acropolis.** This masterpiece of Mnesicles presents an irregularity of plan, exhibiting the Hellenic architect's readiness to adapt his design to the peculiarities of the site. While Doric columns mark the exterior, Ionic were used in the interior to dignify the central passageway. A similar use of this order for interior embellishment was adopted by Ictinus, the chief architect of the Parthenon, in his otherwise Doric design of the **Temple** of **Apollo Epicurios.**

On the other hand, the Ionic order was employed on the exterior of the **Erechtheion,** another work of Mnesicles also irregular in plan. It occupies a sloping site on the Acropolis, where an older temple, burnt by the Persians, had stood. Spoils of the Persian conquest were preserved in it with other relics, held in special veneration. The nucleus of the design is a cella without colonnades (apteral), the sanctuary of Athena Polias (the City's Guardian) and of Erechtheus (a mythic hero of the Athenians) and the Ocean-god, Poseidon The exterior is distinguished by two Ionic porticoes, and by a third, a smaller one, in which the columns are replaced by caryatides, six draped female figures whose heads support the architrave. All these figures face south, the three to the west resting their weight on the right legs; the three eastern on the left—in each case the outer legs—thus giving to the outer contour of their bodies the effect of entasis.

Another Ionic example on the Acropolis is the **Temple of Athene Nike** (Victory), known as the Temple of **Nike**

Apteros; the term "Wingless," however, not describing the statue of the goddess but, as used above, the style of the design—without colonnades.

Theatres.—Only second in importance to the Hellenic temples were the theatres. Both served as memorials of the ancient traditions of the race and as an incentive to higher citizenship. For the drama, which had its origin in religious observances, was a civic institution, maintained by the state and free to all citizens.

The origin of the Greek drama is to be found in the primitive worship of Dionysos, the god of productiveness, and to the last the Greek stage and auditorium perpetuated in their form some trace of their religious origin The nucleus was an altar consecrated to Dionysos. In earliest times each family may have erected its own altar, presided over by the father of the family as priest. Later each community would have its official priest, and on the god's feast-day all the villagers would move in procession to the common altar, headed by the priest and a choir of singers, trained by him. The altar reached, the priest would mount the pedestal, surrounded by the choir, while the body of worshippers disposed themselves around the spot. The priest would recite the greatness of the god and at intervals the choir of voices would chant the dithyrambic song, moving around the altar and accompanying the song with rhythmic movement of body and limbs.

From this root of a religious drama in time grew successive stems. The prowess of some hero would be adopted as a theme. At first the priest, or it may be some wandering poet, would narrate the story; later he would treat it in the first person, impersonating the hero,

sometimes engaging in dialogue with the chorus. Still later, other personages in the story would be separately impersonated, and so the scope of the dramatic representation developed.

Meanwhile the affair still maintained a semi-religious character; the place of presentation was still around the altar of Dionysos and the chorus was retained, taking its part in the action with explanation and comment, still delivered, however, in dithyrambic measure and with accompaniments of rhythmic gesture. The platform of the altar being limited in space, the dialogue was usually confined to two actors at a time, though a third was sometimes allowed. If there were other characters involved, these actors would often "double" the parts; disguising themselves by change of costume, especially by the use of masks. This demanded some kind of a screen behind which the actors could change their costumes and also wait until their presence was required. Skins hung upon poles would at first serve the purpose, or a *skene* or tent, from which we derive our word scene, might be used. Whichever it were, it would interfere with the view of the action from the back and so draw the audience to the "front."

The most important remains of Hellenic theatres are the **Theatre of Dionysos,**[1] cut out of the side of the Acropolis, and the theatre at **Epidauros,** in Argolis, Greece. The plan of the theatre of Dionysos is that of a semi-circle, the ends of which are prolonged for a short distance in a direction at right angles to the front of the skene. Within the horseshoe was the circular orchestra,

[1] Erected eighty years after the death of Euripides, whose plays, like those of Æschylus and Sophocles, were performed in temporary theatres.

still whole at **Epidauros,** in which the main action was carried on by actors and chorus. A different plan is given by the Roman architect, Vitruvius. It is to be noted, however, that Vitruvius lived in the reign of Augustus, by which time what was pure Hellenic had become modified by foreign influences into Hellenistic. He relates, for example, that in his time the height of the *logeion* or speaking platform—the stage of to-day—was from 10 to 12 feet. In earlier times, including probably the period of the Classic drama, the logeion was the platform around the altar, supplemented possibly by a platform two or three feet high extending across the front of the *skene,* from which, at certain points in the play, some, at least, of the actors spoke. This platform, being in front of the scene and enclosed at the sides by projections of the latter, was called the *proskenion,* from which is derived our word proscenium with its different meaning.

By the time that the Hellenic theatre had evolved into a permanent structure, the *skene,* originally a temporary screen, took the form of an architectural background, some ten feet high, with a central door for the entrances of the actors. But the idea of the original screen was perhaps retained in the row of columns which stood a little in front of the *skene,* and could be used, if needed, for the hanging of curtains or even of painted cloths. Meanwhile, the roof of the portico, which extended from the columns to the *skene,* could be utilised by the actors at certain stages of the drama.[1]

The interest of the discussion raised by Vitruvius' de-

[1] Note the similarity of this portico to the projection from the back of an Elizabethan stage.

scription consists in the question how far the actors mingled with or were separated from the chorus, which continued to occupy the *orchestra* or circle on the floor of the auditorium, corresponding to the place of the orchestra stalls in a modern theatre. The orchestra of a Greek theatre was originally the sole "stage," but gradually, as the dramas involved more complexity of scenes, the actors would vary their position between the orchestra and the proscenium; and later, in Hellenistic times, as the religious origin of the drama was forgotten and the use of a chorus began to fall into abeyance, the use of the proscenium would increase.

Finally, when the Romans began to imitate the Greek drama, they dropped the chorus; the acting was confined to the proscenium, and the orchestra no longer needed for the play, became a part of the auditorium, reserved for distinguished spectators. The Roman theatre, in fact, like our own, represented the complete separation of the audience and the stage.

Odeion.—Supplementing the theatre was the Odeion or concert hall, which was constructed on the same general lines but distinguished by the addition of a roof for acoustic purposes. The oldest known is the **Skias** at Sparta, so called from its roof resembling the top of a parasol. The **Odeion of Pericles,** which served as a model for subsequent halls, was built on the southeastern slope of the Acropolis, its roof being made in imitation of the tent of Xerxes and constructed of the masts of Persian vessels, captured at the battle of Salamis. The most magnificent example, however, was erected A. D. 162 on the southwest slope, by a wealthy citizen, **Herodes Atticus,** in memory of his wife. Its ceiling is said to have

been composed of beams of cedar, carved with ornament, while decorations in the form of paintings and other works of art embellished the interior, which had accommodation for eight thousand persons.

CHAPTER III

ROMAN CIVILISATION

Such empire as Hellas achieved was succeeded by the Roman Empire. The earlier, as we have seen, was an empire loosely founded on kinship of race, ideals, and character, and on common interests of commerce. It was an empire of individualism; preserving the individuality of cities and their individual states, producing a few men of rare individuality and, as it spread throughout the Mediterranean, planting colonies which maintained their independence both against the Motherland of Hellas and the people in their immediate surroundings. It was, from the first, an empire of the spirit and, as such, survived its physical dissolution and has maintained its dominion over the human mind even to the present time.

On the contrary, the Roman Empire, in so far as it succeeded, was an empire of constructive organisation. It grew, cell by cell, each added cell becoming gradually impregnated with the life-principle of the earliest one, so that every part of the unwieldy body was an organic part of the whole. Thus, in time, each independent city and its adjoining community, alien races and huge slices of foreign territory, became gradually absorbed into the practical system of government that originated with the little settlement of Latins which first occupied the Palatine Hill and then extended its authority over the seven hills of Rome. Part after part became absorbed into the system of the Lex Romana and enjoyed the benefits of the Pax Romana. The Roman citizenship, judiciously

extended over the whole empire, carried with it substantial rights and equally substantial duties. The provinces of the empire contributed men of learning, generals, and statesmen to the central government. In time some of the provinces, notably those of Spain and Southern France, became more characteristically Roman than Rome herself. They had absorbed her system and her culture, and, far removed from the petty intrigues which convulsed the capital, reached a degree of civilisation that represented the finest product of the Roman ideal; an ideal that included individual uprightness, a sense of service and self-sacrifice for the common weal, and a high regard for order. It was a practical ideal, little concerned with abstractions, not devoted to excessive refinement, but centred on the effectual accomplishment of the individual and collective requirements of everyday life.

It is true that this ideal was never fully achieved. This is only to say that the ideal was truly human and therefore at the mercy of human chances and weaknesses. Moreover, that it was really an ideal; a principle of life, that is to say, which by reason of its bigness was only possible of partial achievement. And if the Romans failed in achieving theirs, they failed nobly, and with sufficient success to have left behind them a legacy of law and order and constructive principles of government that, like the cultural ideals of the Hellenes, survive to the present time.

And the Roman Empire played a part in the progress of the world, more immediately necessary than that of Hellas. The latter's Empire of Spirit was in advance of its age. The world outside of the scattered outposts of Hellas was too rude, too backward in the very necessaries of life, to accept its message of beauty. Recognising

this, the Hellenes called all other races and nations barbarians and held aloof from them. The Romans, on the contrary, absorbed the aliens, instilled into them the rudiments of their own civilisation, while taking advantage of any good trait in the people themselves, so that they helped them to rise out of themselves to a higher plane of living. In a lawless world they became the great exponents of order, the upbuilders and engineers of a system of organised society, and so firmly did they lay the foundations and so strongly did they build that, although subsequent hordes of barbarians overthrew the dominion of the empire of Rome and laid waste many of the visible signs of her building, the destroyers were gradually absorbed into her system and became its continuers.

Therefore, when we consider the Romans specifically in relation to architecture, we look back to them as tireless and prodigious builders, constructors, and engineers, whose sense of beauty in architecture, as well as their aspirations in all branches of higher culture, were derived from the Hellenes. Their respect for the latter was such that so long as possible they tried to treat them as an independent power, with whom they could pursue the mutual advantages of commerce. Gradually, however, the tangle of politics made absorption necessary, and after a series of invasions Hellas herself became a province of the Roman Empire.

War, in those days, as for centuries after, involved the barbarous practice of looting, and the Romans, with their shrewd instinct for acquiring what they most needed for their own development, bore back home in increasing quantity the treasures of architectural and sculptural art. Later, as the power of Hellas dwindled, Rome became the centre to which Hellenic artists and scholars flocked.

The conquest of Hellas and gradual absorption of a part of her culture occupied the second century before the Christian era and the earlier years of the first. By this time, however, Rome herself had become a prey to the rivalries of political factions, beginning with the conspiracy of Sulla and ending with the civil war that followed upon the assassination of Julius Cæsar. The latter's great-nephew, Octavianus, in conjunction with Marc Antony, conquered Brutus and Cassius at Philippi in Macedonia and Octavianus assumed authority over the West, while Antony established himself as ruler in the East. But his infatuation for Cleopatra raised the suspicion in Rome that he intended to marry her and make himself despot of an Oriental empire with Alexandria as its capital. War was declared against him as a national enemy and he was defeated at Actium, B. C. 31. The authority of Octavianus was now supreme. Republicanism, as a practical form of government, was dead. Conditions demanded one-man rule and Octavianus, in B. C. 27, resigned his office as Triumvir and received from the Senate the title of Augustus, which hitherto had been reserved for the gods.

During this period of struggle the Hellenic influence had been rapidly growing. The sons of the ruling class had Greek tutors; many studied in the schools of Athens and Rhodes, and Roman writers began to emulate the Greek authors. Cæsar published his Commentaries on the Gallic War and on the Civil War; Sallust wrote on the Conspiracy of Catiline and the Jugurthine War and Cornelius Nepos compiled biographies of eminent men. Cicero published under the name of "Philippics" the speeches which he made against Antony in the Senate, as well as "Letters" to various friends on the topics of

the times, while Lucretius composed in verse a treatise on the "Nature of the World" and Varro was the author of an encyclopædic work relating to the history, geography, agriculture, law, literature, philology, philosophy, and religion of the Romans. To Varro also had been assigned by Julius Cæsar the collection of a public Library of Greek and Roman writers.

The enthusiasm for literature was encouraged by Augustus and his minister, Mycænas, who saw in it a means of allaying the bitterness of party strife. To this, the "Augustan" or "Golden Age," as the writers called it in flattery of their patron, belong Horace, Livy, and Virgil.

In an effort also to lead the people back to the honourable simplicity of their forefathers, Augustus revived the ancient religious ceremonies and restored the temples. He became chief pontiff and, being regarded as the son of the deified Julius—in reality, his great-nephew—was treated almost as a divinity in Rome and deified by the provincials who built temples in his honour.

It was in the Augustan Age that Roman architecture virtually commenced and its developments are associated with Imperial rule. Of the period immediately preceding the new era Mommsen writes as follows: "There was in the world as Cæsar found it much of the noble heritage of past centuries and an infinite abundance of pomp and glory, but little spirit, still less taste and least of all true delight in life. It was indeed, an old world; and even the richly gifted patriotism of Cæsar could not make it young again."

Rome, the heart of the Empire, was corrupt. The ruling class coveted pensions from the public exchequer to be spent on luxurious living; while the mass of the populace clamoured for "panem et circenses"—feeding and

shows at the public charge. To satisfy their hunger both classes would have taxed the provinces. But among the chief duties of the emperors were the development of the resources of the provinces and the protection of the frontiers; and, while the best of the emperors performed these functions from high motives, even the worst found it politic to court the growing power of the provinces. Thus, the main vitality of the empire was in its extremities, and, although the emperors beautified Rome, they also encouraged public works of utility and beauty in the provinces. To this end a law was passed, permitting municipalities to receive bequests and gifts from private individuals. In the liberality with which wealthy provincials enriched their communities, Dr. Ferrero, the latest historian of Rome, has seen a parallel to the munificent public gifts of American millionaires.

Accordingly, this great era of Roman building left its impress not only upon Italy, but in Greece and northward as far as the Danube, in Asia Minor, Syria, Palestine, Egypt, along the whole Northern coast of Africa, and in Spain, France, and Great Britain as far as the Firth of Forth. It was distinguished not only by the magnitude of the operations but also by their character.

Whereas in Egypt the architectural works had consisted of temples and tombs; and in Hellas these had been supplemented by theatres and odeia; while Assyria and Persia left their memorials in palaces, those of the Roman Empire embraced all of these types and many more. The Romans applied architecture to the practical needs of everyday life, and reinforced it with engineering. They overlaid the Empire with fine trunk-roads, many of which survive to-day; constructed sewers; spanned rivers with bridges; conveyed water in countless miles of aqueducts;

erected fora and market-places, triumphal arches, temples, palaces, villas, baths, basilicas, theatres, and hippodromes; providing alike for the necessities of life, the needs of government, and the amusements and luxuries of living.

To accomplish so prodigious an amount of building the Romans systematised the methods of construction in regard to both the labour and the material. The labour was mainly of an unskilled kind, including soldiers of the legions, slaves, and subjects liable through debt or other causes to statute labour. This employment of unskilled labour was made possible by the Roman habit of carrying the principle of repetition of motives to its utmost limit, and also by the methods of construction which they invented.

This was the extended use of concrete. During the Republic the Romans had followed the Greek method of building with large blocks of stone, unconnected with mortar. Their practical spirit, however, urged them to make a more economical use of materials and instead of composing the walls entirely of blocks of stone or marble, they used these or bricks as a facing, filling in the thickness of the wall with small fragments of stone mixed with lime or mortar.

They had been led to this practice by the existence of *pozzolana,* a volcanic product of clean, sandy earth, found in Rome and in greater quantities at Pozzuoli on the Bay of Naples, which, when mixed with lime, formed a concrete of exceptional hardness, strength, and durability. Material, approximating the properties of pozzolana and lime, was procurable in all parts of the Empire. Accordingly the use of this method of construction gave a similarity to Roman building everywhere.

While the chief, and almost sole building material in Greece was marble, the geological formation of Italy supplied stone as well as marble and plentiful supplies of clay, which was converted into terra-cotta or bricks. The bricks were of two shapes: either square, from 1 to 2 feet in size and 2 inches thick or triangular in plan and of about 1½ inches in thickness. The latter were especially used for the facing of the walls, their pointed ends being driven into the concrete to form the smooth surfaces, while at the corners the points projected. In Rome itself the following materials were available: *travertine,* a hard limestone from Tivoli; *tufa,* a volcanic substance of which the hills of Rome are mainly composed; and *peperino,* a stone of volcanic origin from Mount Albano.

While Roman architecture was developed under the stimulus of Greek art and culture it probably owes its origin to the example of the Etruscans.

The origin of this race is uncertain, but its own traditions ascribe it to Lydia in Asia Minor, whence it may have passed during that general migration from Hellas into Italy about B. C. 1000. It was for long the dominant power in Italy, extending at various times over a territory that reached from the Tiber to the Apennines, and southward into Campania. This gave the Etruscans command of the Tyrrhenian Sea and made them commercial rivals of the Carthagenians. Their enmity toward the rising city of Rome would be natural and some authorities believe that the reign of the Tarquin kings was a period of Etruscan domination. Then the Romans expelled the tyrants, established a republic of their own, and by degrees wore down the power of the Etruscans, who had become enervated through increase of luxury.

Their civilisation long antedated that of the Romans. The earliest remains of art, found in Etruria, are now believed to have been imported from Hellas; but the tombs have revealed a quantity of later art objects which prove this people to have been skilful in the modelling and colouring of terra-cotta, in mural paintings, jewellery, and household adornments.

"The houses of the earliest period, to judge by the burial urns, known from their shape as 'hut-urns,' were small single room constructions of rectangular plan, similar to certain types of the *capanne* used by the shepherds to-day. Probably the walls were wattled and the roofs were certainly thatched, for the urns show plainly the long beams fastened together at the top and hanging from the ridge down each side." (Encyclopædia Britannica, "Etruria.") Tombs erected even later than the fifth century B. C. were cut in imitation of a most simple form of post and beam construction. The elements of the decoration, such as capitals, mouldings, rosettes, patterns, etc., were borrowed from Greece, Egypt, and elsewhere.

The architectural remains comprise tombs, city walls, gateways, bridges, and aqueducts, the walls of which are remarkable for their cyclopean masonry, while the general character of the construction resembles the early work of Tiryns and Mycenæ.

No example remains of Etruscan temples, but Vitruvius has described them. The plan was nearly square and the cella was divided into three chambers, since it was in groups of three that the Etruscans worshipped their deities. The columns represented in rude form the Doric order, set so far apart that it is concluded they were surmounted by beams of timber. A further dis-

tinction of the Etruscan temple, adopted by the Romans, was the replacing of the stylobate by a *podium*. This was a continuous pedestal or low wall on which the columns were carried. It was approached in front by a flight of steps, enclosed between the prolongation of the side-walls of the podium. The most famous example was the Temple of Jupiter on the Capitoline Hill, dedicated B. C. 509, which contained three chambers, for the statues of Jupiter, Minerva, and Juno. It was destroyed by fire B. C. 83, and rebuilt by Sulla, who brought over for the purpose some of the Corinthian columns from the temple of Zeus Olympius in Athens. (See p. 122.)

Until recently the great sewer, or "Cloaca Maxima," of Rome, constructed about B. C. 578, has been attributed to the Etruscans and considered a proof that they introduced the use of the arch to the Romans. But in 1903, when excavating the Forum, Commendatore Boni proved that the drain was originally uncovered and that the arch, which consists of three rings of voussoirs, each 2 feet 6 inches high, was added at the end of the Republic. "Thus the honour, not of discovering the arch, for it was known in the East, as we noted, but of popularising its use, does not belong to the Etrurians, though they did use it at a comparatively late time for city gates, as at Volterra." (Encyclopædia Britannica, "Etruria.")

Following Augustus, the emperors under whom Roman architecture chiefly flourished were: Nero (A. D. 54–69), Vespasian (69–79), Trajan (98–117), Hadrian (337–138), Septimus Severus (193–211), Caracalla (211–217), and Diocletian (284–305). By Constantine (306–337) were inaugurated two changes of policy, which affected the destinies of the world. For by granting toleration to all

religions he raised Christianity to equal footing with paganism and thus paved the way for the power of the Church; and in establishing his capital at Byzantium took the first step in the partition of the Empire into East and West. Aided by his vigorous efforts, architecture, which had declined, enjoyed a measure of revival, in which, as we shall see later, the Church began to play a conspicuous part.

With the commencement of the fifth century, A. D., began the irruption of Barbarians. Attila's Huns swept like a scourge over Europe, while the German tribes conquered the provinces in turn and occupied them. In 455 Rome was sacked by the Vandals. In 476 Odoacer was proclaimed by his troops King of Italy, and thus the Western part of the Empire was finally separated from the Eastern. This is the date selected to mark the "Fall" of the Roman Empire. Meanwhile the steady decline of the power of the emperors had been long in process and was accompanied by a corresponding increase in the power of the Popes. Henceforth, during the "Dark Ages" of civil confusion, the influence and authority of the Church were the chief sources of social as well as religious organisation.

The Roman ideal of civilisation received its most characteristic architectural expression in the several fora, beginning with the oldest—the Forum Romanum. From ancient times it was the heart of the city; the centre of civil activity; the scene of some of the most stirring incidents in the growth of Rome; in later times the nucleus of the pomp and pride of the Empire. Here at some time was erected a cylindrical monument in three tiers, the Umbilicus or Navel of Rome, and hard by it stood the

Milliarium, a marble column, sheathed in bronze and inscribed with the names and distances of the chief cities on the great trunk-roads that radiated throughout the Empire from the thirty-seven gates of Rome.

Between these two monuments extended a platform, decorated with the bronze beaks of conquered vessels and hence called the Rostra, from which any citizen could speak who had aught to say concerning the commonweal. For it faced the Comitium or open space, which from earliest times had been the meeting place of the General Assembly of the people. It is true that the voice of the people was too often dominated by the Patrician class whose Curia or Senate House overlooked the Comitium; but the Comitium continued to represent, at least, the theory of Roman Government and to be the veritable nucleus of the Roman Forum.

Since the Forum embodied the ideals and the progress of Rome, its architectural aspects were continually changing throughout the more than one thousand years of Rome's vicissitudes. But without attempting to follow these changes—many of which are shrouded in obscurity—let us try to picture the Forum in its general aspects and particularly as the embodiment of the Roman ideal.

The ancient citadel was the Capitoline Hill on which in early times had been erected the temple already mentioned to the three divinities of Male and Female Power and of Wisdom—Jupiter, Juno, and Minerva. It corresponded to the Acropolis of Athens and her Parthenon. But whereas the Parthenon was the nucleus of the Hellenic ideal, as embodied in architectural glory—the embodiment of an ideal, detached and lifted up above the common life—the formal grandeur of Rome descended from the Capitoline Hill and occupied the low ground

that separated it from the Palatine, so that it might identify itself with the practical, everyday ideals of the city.

And, first, for the purely practical. The southern side of the Forum was in early times bordered with the tabernæ or wooden booths of the butchers and other produce merchants, while on the north were the shops of the gold- and silversmiths, and money changers. The Forum, in fact, was the central market of Rome and came to be its financial centre, and, as a necessary result, the centre also of legal and judicial procedure. In later times, as the volume and intricacies of business increased, the tabernæ were replaced by basilicas, which included halls of justice and of exchange for merchants. Meanwhile, let us try to picture the Forum as the embodiment of Roman ideals.

It was bounded on both sides by the Via Sacra, or Sacred Way; the two forks uniting near the foot of the Palatine Hill, around which the Sacred Way continued to its junction with the Appian Way. Its stones were sacred because they had been trod by the countless hosts of Rome's victorious armies, returning in triumphal procession to pay their homage to the deities of Male and Female Power and of Wisdom upon the Capitol.

As the soldiers swept out of the Appian Way, they would skirt the spot, where in later times arose the Colosseum, and the roadway was spanned by the Arch of Constantine, and a little farther on by the Arch of Titus. From this the road advanced in an easterly direction and then turned north.

Then from earliest times two objects would greet the victors' eyes. Upon the right stood the arch of two-headed Janus, god of gates and doors. It was all but a

certainty that its two doors would be standing open; for, although this army was returning victorious, there were others almost continuously engaged on the frontiers of the empire. So the soldiers, glutted with fighting and hungry for the sight of their loved ones, would turn more eagerly to the left, where rose the circular temple of Vesta, guardian of the home and hearth. It was the symbol of the ideal of sane and simple home life, on which the greatness of Rome was founded, and as the Vestal Virgins thronged the steps of their convent or atrium, hard by the temple, the eagles would be lowered and every bronzed warrior would salute the maiden priestesses, who, in their absence, had kept perpetually alive the sacred fire.

Just beyond this spot in later times Cæsar Augustus erected a Triumphal Arch. Meanwhile, from Rome's early days the victorious hosts would next defile past the Temple of Castor and Pollux, memorial of the victory gained at Lake Regillus with the help of these twin gods. Close by it came to be erected the Temple of Cæsar, in front of which the great Julius caused a rostrum to be placed, from the steps of which the oration over his dead body was spoken by Marc Antony.

At this spot the veterans would enter the Forum proper, welcomed by the cheers of the merchants; in old times, from the fronts of their booths and later from the porticoes of the Basilica Æmilia on the right and the Basilica Julia on the left. Then, both early and late in Rome's history, would be reached the ancient Temple of Saturn, god of seed growing and the bounties of the soil, a god of meaning to the soldiers, for many a veteran had been left behind in distant lands, planted upon farms that were to consolidate the power and prosperity of

the Empire. Moreover, in some of the chambers of the Temple, which formed the official Treasury of Rome, a part of their spoils of war would be deposited.

The procession by this time is filing past the Comitium, filled with enthusiastic crowds, while orators welcome it from the rostra and the Senators are ranged in ranks upon the steps of the Curia. The roar of welcome is still in the ears of the host as it begins the ascent of the Capitol, passing under the Arch of Septimus Severus, if the date be after A. D. 203. Midway of the ascent, it passes the Temple of Concord, memorial of the termination of the internecine struggle between the Patricians and the Plebs; skirts the Tabularium, wherein the archives of the Empire were preserved, and finally reaches the summit of the Capitol.

Let us take one glance back before the picture fades. The scene is superb but not without confusion. The Romans paid no attention to orientation; consequently there is little uniformity in the placing of the several structures. They vary not only in size and design, but also in the direction which they face. In the contracted space the various edifices seem crowded. Indeed, the conjectured restoration of the Roman Forum and vicinity suggests rather a medley of magnificence.

But even in this respect the character of this heart of Rome, lying between the Capitoline and Palatine hills, symbolised the magnificent variety of elements that composed the Empire. One may find some parallel to Rome's confusion of appearances in the variety and, for the most part, lack of an organic lay-out in the modern London, the present mother-city of an Empire, founded, like the Roman, upon commerce, and like it in having grown, cell by cell, transcending it, however, not only in size but in

grandeur. For the policy of the British Empire has gradually evolved beyond the Roman, substituting for the process of absorption the principle of free, self-governing dominions.

CHAPTER IV

ROMAN ARCHITECTURE

The Romans enlarged the scope of architecture in the direction of the art of the engineer. While Hellenic architecture had been an expression of the faculties of reasoning and of taste, co-operating in a singular harmony, Roman architecture was the product of reasoning stimulated by a practical sense and an extraordinary energy and audacity. In place of excessive refinement and sense of proportion, it is distinguished by variety, vastness of scale and exuberance of decorative detail. While every part of a Greek temple was constructional, having its distinct function in contributing to the stability as well as adornment of the whole structure, the Romans, as we have noted, had a uniform system of building in which they applied the structural details of the Greeks, very largely in the way of added embellishment.

Their aptitude for borrowing and adapting is apparent in their orders of columns and entablatures.

Roman Orders.—In the first place, they borrowed from the Etruscans the so-called Tuscan order. This had a rudimentary Doric form; the column being seven diameters in height; the shaft unfluted and tapering toward the capital, while the entablature was simpler, having no triglyphs, mutules, or guttæ.

In borrowing from the Hellenes, the Romans made little use of the Doric order. When it is used, as in the form of engaged columns in the **Theatre of Marcellus**, the

height of the columns was increased in proportion to their diameters; the shafts were either smooth or channelled with semicircular, instead of the subtler, elliptic flutings, separated by narrow fillets; a base was added and modifications were made in the details of the capital. The architrave did not overhang the face of the column and was reduced in height; the triglyphs were used in the frieze only over the centre of the columns, even at the angles, while the cornice was lighter, with dentils sometimes taking the place of mutules. The Doric, in fact, did not appeal to the Roman taste for rich decoration, and, in so far as it was used, was degraded in style.

The same is true of the Roman adaptation of the Ionic order. Simpler and more commonplace curves replace the extreme refinement of the volutes and the fillet of the latter was carried invariably across the top of the echinus or cushion, while the ornamentation of the entablature was more profuse. The best use of this order is found in the upper story of the **Theatre of Marcellus**; the worst, on the eight remaining columns of the **Temple of Saturn** in the Forum Romanum.

The Corinthian order, of which no type sufficiently definite to constitute an order had been evolved by the Greeks, was fully worked out by the Romans, with the assistance of Greek artists, and became the favourite expression of their taste for richness. The shaft was either smooth, as in the early example of the Pantheon (B. C. 27), or fluted as in the great temple of Castor and Pollux; the heights in these two cases being respectively 9¾ and 10 diameters. A special base was designed, consisting of tori, scotia, and fillets, resting on a square plinth.

The inverted bell of the capital was surrounded by an upper and lower row of acanthus leaves, which differ from

the Hellenic forms in being blunter at the tips. Above the rows of leaves projected the stalks, or "caulicolæ," which terminated in spirals, both in the centre of each face and at the angles of the abacus. The four sides of the latter are concave and decorated in the centre with a rosette. In the more sumptuous examples further enrichment of ornament was added to the capital, while the capitals of the **Temple** of **Castor and Pollux** present a unique instance of the central spirals being interlaced.

The Corinthian architrave in Hellenic usage consisted, it will be remembered, of three bands, as in the Ionic order. The Romans frequently embellished the middle one with a version of the anthemion motive. They also added enrichments to the bed mould beneath the frieze. The latter was frequently carved with acanthus scrolls, grotesque figures, and ox-skulls, and garlands. The cornice was also enriched with carved ornament, of which the most characteristic were *modillions* or brackets, which appear to support the cornice.

The Composite order was an invention of the Romans and possibly suggested by the capitals of the **Erechtheion** in **Athens**, where the Ionic spirals appear above a necking carved with anthemion ornament. The capital of the Composite order consisted in the upper part of Ionic spirals, often richly decorated with foliage, and in the lower of two rows of acanthus leaves, as in the Corinthian order, which was followed also in the other details of the column and entablature.

The mouldings in Hellenic architecture are distinguished by the refinement of the contours, in Roman by the richness of carved ornament.

The anta, which appears in Greek temples at the corners of the cella walls was developed by the Romans into

the *pilaster*. This was a square pier, projecting about one-sixth of its width from the wall; used either to divide up and decorate the wall surfaces, or to serve as a "respond" to a column. It was frequently fluted and corresponded with the column in its details.

Arch-Vaulting.—The Romans did not invent the arch, but generalised its use and elaborated it into vaulting, thus introducing into architecture an element of construction capable of endless application and lending itself not only to utility but also to variety and magnificence. In doing so they were assisted by their discovery of the use of concrete. By means of supports and sheathings of rough timber, temporarily erected, they were able to cast their arches or vaultings in any form and practically of any size. The concrete "set" quickly and the arch or vaulting thus became a solid mass, which exerted but little thrust and covered the space with the rigidity of a lid or cup.

Such method of construction lessened the tendency of the arch or vaulting to exert a lateral strain or *thrust* which occurs when the arch is composed of *voussoirs* or, similarly, separate blocks of stone or brick are used in the vault. It tended to concentrate the strain on the vertical supports. Yet the Romans, though concentration of strains was a chief principle of their building, took no chances in the matter of stability and also distributed the strains. For example, the nave vaulting of a basilica would be reinforced by aisle vaulting, which was carried on walls that were either at right angles or parallel to the nave. But owing to the method of concrete construction and to the facility with which it could be employed, the Romans were able to erect vaults over buildings of complex plan and spaces of great size.

The vaultings were of three kinds:

1. The *semicylindrical* vault, called also the *wagon-headed* vault or *barrel* vault.
2. The *cross* or *groined* vault.
3. The *dome* or *semidome.*

The semicylindrical vault was a continuous arch spanning an oblong space, a corridor, and sometimes a curved passageway.

The cross or groined vault was used over square spaces, its weight being carried at the four angles. It was formed by the intersection at right-angles of two semicylindrical vaults. When employed over long apartments or corridors, the ceiling was divided into a series of square compartments or *bays,* each covered by a cross-vault. Since the vaulting in each case was carried upon the corner supports, these became piers, and the wall spaces in between them, being thus relieved of the pressure of the vaulting, could be utilised for the openings of doors and windows. Moreover, a square space could be subdivided into bays, rendering it possible to vault a large area with no interruption to the floor-space except that of the piers.

The dome was used for covering circular spaces, and when the space is small the covering is called a *cupola* or little cup. Semidomes were employed over recesses.

The finest existing example of a Roman dome is that of the **Pantheon**, which, however, affords an exception to the usual method of construction. For here, instead of being composed of concrete, thus forming a solid shell, the dome, so far as it has been examined, is found to be built of bricks, laid in almost horizontal courses.

It is to be noted that the so-called "pendentive" dome, supported by arches over a space, *square in plan,* is not

found in strictly Roman buildings and was a development of the Byzantine architects.

The Romans also employed flat roofs and ceilings. In certain of the baths so much iron has been found amid the debris, that it is supposed the roofs were constructed with a framework of this material, fitted together with T joints. Otherwise the ceilings were made of crossed beams, dividing the space into *coffers.* The exterior of the roofs was covered with a sheathing of terra-cotta tiles or, as in the original roof of the Pantheon, of bronze gilded plates, which now are replaced by lead.

Vault and Wall Decoration.—Sheathing was also applied to the exterior and interior of the whole structure, forming, as it were, a garment of decoration. In the case of vaulting, the interior decoration was composed of stucco coffering; square, hexagonal, or octagonal panels, inclosed within raised framework that was arranged in a geometrical pattern. Sometimes the coffering was replaced by mosaics; which were of two kinds.

1. *Opus tessellatum* formed of tesseræ or cubes of marble or glass, arranged in patterned designs that often included figures.

2. *Opus sectile,* in which the tesseræ were cut into various shapes, to form the pattern, as in marquetrie. A rich kind, made of red and green porphyry, was distinguished as *Opus Alexandrinum.*

At other times the vaulting and walls were covered with hard plaster, wrought to a fine surface, which was polished and frequently embellished with mural painting.

The walls were also overlaid with slabs of coloured marble, in the selection and treatment of which the Romans took a notable pride.

Further, both the exterior and the interior walls were

relieved with carved decoration, which took the form of pilasters, arches, mouldings, and panels, encrusted with arabesques. These and the other embellishments could be so easily applied to the concrete shell, that Roman decoration had a tendency to become profuse and over-elaborated. Whereas in Hellenic architecture every decorative detail was an intrinsic part of the structure, Roman decoration was something added after the structure was completed. It was, in effect, like clothing, fitted to the form of the body, and varying in design and sumptuousness according to the taste and purse of the wearer. Since architecture generally was an expression of pomp, pride, and power, it was inevitable that the richness of decoration should frequently run to extravagance.

To the lay-student, at least, the actual forms of Roman architecture are of less interest than the uses to which they were put. For the Roman genius was displayed in practicalness; in the resourcefulness with which it extended the scope of architecture to serve the necessities and ideals of life. Hence the temple-form has ceased to occupy the chief attention; the truly monumental character of Roman architecture is distributed over a variety of achievements of magnificence and utility.

Temple Plans.—The plan of the Roman temple was circular, polygonal, or rectangular; the last being the most usual type. The best preserved example is the so-called "**Maison Carrée**" at **Nîmes** in Provence, which was erected during the reign of Hadrian (A. D. 117–138). Its form is of the favourite kind: pseudo-peripteral, that is to say, the columns which surround the sides and end are not detached from but built into the walls of the cella. The portico has a deep projection, supported by ten detached columns. As usual in a Roman temple the stylo-

bate is replaced by a podium, in this case about twelve feet high, which projects in front, enclosing the entrance steps. The columns are of the Corinthian order, 32 feet in height, supporting an entablature which measures 8 feet to the lower angles of the pediment. The frieze is bored with holes, in which it is supposed the letters of an inscription were fixed, and the cornice is richly decorated.

Another very interesting example at **Nîmes** is the so-called **Temple of Diana**, which probably was a *nymphæum*, or structure for flowers, statuary, and fountains, attached to some *thermæ*. The plan shows a central chamber, flanked by two passages; the exterior walls being devoid of columns. Meanwhile, the interior walls of the central chamber have a series of detached columns, supporting an entablature from which spring the curves of the barrel-vaulted ceiling. The outward thrust of the latter is offset by the continuous vaulting of the side-passages. It is probable, as we shall see, that this arrangement furnished a type for many of the Romanesque churches of Southern France.

Of the circular temples the best known examples are the **Temple of Mater Matuta** in **Rome**, the **Temple of Vesta** at **Tivoli**, and the **Pantheon**. Nothing but a few fragments remain of the **Temple of Vesta** in the **Forum Romanum**. The first named, situated in the **Forum Boarium**, is peripteral, consisting of a cylindrical cella, 28 feet in diameter surrounded by a circular colonnade of 20 Corinthian columns, 34 feet 7 inches high; the whole standing on a podium raised 6 feet from the ground. In the case of the Temple of Vesta at Tivoli the Corinthian columns, 18 in number, are 11 feet lower. "The reason for this difference," writes Professor Banister-Fletcher,

"is instructive. The Temple of Mater Matuta, placed in a low, flat situation, has columns of slender proportion in order to give it the required height; whereas the Tivoli example, placed on the edge of a rocky prominence and thus provided with a lofty basement, has columns of sturdier proportions." A further difference is found in the foliage decoration of the capitals of the two temples; those of the **Temple of Mater Matuta** having pointed leaves of the Hellenic type of acanthus, while in the Temple of Tivoli the Roman type is adhered to.

The most famous circular example, as well as the most impressive of Roman temples to the modern mind, is the **Pantheon.** Investigation has proved that the circular part or Rotunda occupies the site of an earlier nymphæum, on the south side of which, in the reign of Augustus, B. C. 27, Agrippa erected a temple, consecrated to the Divinities of the Julian house under the name of Pantheum ("all-holy"). Hence the inscription on the frieze of the present portico: "M. Agrippa L. F. Cos. tertium fecit." This temple, which, from Pliny's account seems to have had a dome, was destroyed in the great fire in A. D. 80.

The present edifice was built by Hadrian, A. D. 120–124. The Rotunda occupies, as we have said, the site of an ancient nymphæum, the floor of which, however, was raised 8 feet. Agrippa's portico was removed from the south to the north side and set up with a front of 8 columns instead of 10. There are 16 in all. The portico is supported by 16 Corinthian columns, each a granite monolith 42½ feet high, with marble Corinthian capitals. The tympanum was originally filled with bronze reliefs, representing a *gigantomachia,* or battle of the gods and giants.

The walls of the rotunda, which are of solid tufa concrete, faced with thin bricks, are nearly twenty feet thick. This mass was partly to support the dome and partly to admit of eight recesses, opening from the interior. One forms the entrance, while three of the others are semicircular in plan and the remaining four rectangular. The exterior walls, carried far above the spring of the dome, was veneered with porphyry and marble and enriched with Corinthian pilasters and sculptured ornament, a considerable part of which still exists.

Meanwhile, it is the interior of the building that presents the chief impressiveness. Here the walls, which originally were faced with precious Oriental marbles, extend to a height of only two stories, crowned by the vast dome, which in the interior has a height equal to its diameter—one hundred forty-two and one-half feet. It is embellished with coffers, which in order to assist the perspective effect are foreshortened, diminishing in width as they ascend. Thus the gaze is carried up with a sweep to the central aperture at the summit, an open circle twenty-seven feet in diameter, the sole source of light to the interior. "One great eye opening upon Heaven—by far the noblest conception for lighting a building to be found in Europe." It is as if the soaring imagination of the architect could brook no limit to its vision and must incorporate with his vault the firmament itself. In this magnificent audacity men have seen a symbolic reference to the ancient worship of Jupiter, the god of gods, beneath the open vault of heaven. Meanwhile, the architect may have derived the idea from the old nymphæum with its court open to the sky. And of the two, some will prefer to believe the latter, seeing in it a beautiful illustration of how the artist can and sometimes will use the re-

quirements of practical conditions as an inspiration to the creativeness of his own imagination.

From structures circular in plan, we may pass to those in which the plan had the form of an ellipse, or comprised as its chief feature portions of a circle. In the first class belong the amphitheatres and to the latter the various circuses and theatres.

The prototype of all these was the Hellenic Theatre, in the construction of which the architect took advantage of a sloping site.

The Romans, on the other hand, with their general use of arch and vaulting, were independent of natural assistance and usually built their circuses and amphitheatres and theatres in the open.

Circus.—The Roman circus was an adaptation of the Hellenic Stadium, which, however, was used chiefly for athletic games, while the Circus was employed for horse and chariot races. The oldest was the **Circus Maximus,** situated between the Palatine and Aventine; but the one of which most remains have been preserved is the **Circus Maxentius,** near the tomb of Cæcilia Metella on the Appian Way. Its plan presents a long rectangle terminating at one end in a semicircle. Surrounding this were tiers of marble seats, supported by raking vaults and an external wall of concrete. At the square end were situated the *Carceres* or stables and down the centre of the rectangle ran a *spina* or barricade, with a *meta* or post at each end to mark the turning points. "To graze the meta" was a Roman saying for the taking of great chances. The course was seven times round and on the top of the spina were oval objects, one of which was removed on the completion of each lap of the race.

Amphitheatre.—The most magnificent of the amphitheatres was the Flavian, known since the eighth century as the **Colosseum**, probably from the colossal statue of Nero which once adorned it. Its plan is elliptical, the main axis being about 615 feet and the shorter about 510 feet; while the arena, which is oval, is 281 feet long by 177 feet wide. The number of spectators that it could accommodate has usually been stated as 87,000; but the calculation is now said to have been based on a misapprehension of the records and has been corrected to 45,000 seats and standing room for 5000.

The exterior comprises four stories. The three lower are composed of arches supported by intermediate piers which are ornamented with columns, respectively, of the Tuscan, Ionic, and Corinthian orders. The fourth story, which, when the amphitheatre was completed in A. D. 82, appears to have been of wood, presents a wall adorned with Corinthian pilasters. Between these, projecting from the cornice, were corbels, pierced to hold the poles that sustained the *velarium* or awning. The imposing character of the exterior is due not only to the structure's immense size, but to the difference in unity secured by the application of the three orders, and to the magnificently sweeping lines of the entablatures.

The interior shows the arena surrounded by a smooth wall, above which the seats rise in concentric tiers to the height of two stories. Here they are bounded by a wall, through which are entrances to the seats while it also acted as a parapet to the upper gallery. The fourth story formed a continuous peristyle. The whole area for spectators was called the *cavea.*

The place of honour was the circle nearest to the arena, called the podium, in which sat the Emperor, senators,

principal magistrates, Vestal Virgins, and the provider or "Editor" of the show. In the amphitheatre at Nîmes seats in the podium were also assigned to the various guilds, whose names are still inscribed upon the seats with the number of places reserved for each.

The principle of construction adopted in the Colosseum, as may be seen from the plan, is that of wedge-shaped piers, radiating from the arena to the exterior. These were connected by vaults which ran downward toward the centre and also in concentric rings, forming passageways to all parts of the cavea. The system is one of concrete vaulting resting on piers of the same material, the latter being reinforced by tufa where the pressure was greater and in the parts of greatest strain by blocks of travertine, four feet thick, sheathed with brick work. "The supports have been calculated at one-sixth of the whole area of the building."

Theatre.—The form of the Roman theatre grew directly out of that of the Hellenic, but was modified to suit the change which had come over the character of drama. The religious origin of the Hellenic drama had been completely left behind. There was no longer any pretence of a chorus; accordingly the circular space of the orchestra, which had been used by it, was now filled with seats, reserved for persons of distinction. It became, in fact, that part of the auditorium which we still distinguish as the orchestra seats.

Already, in later Hellenic drama, the action of the principal players, which originally had been confined to the orchestra, had extended more and more to the slightly raised platform in front of the proskenion. It was therefore but another step to limit the action to the platform, which, now that the orchestra was filled with spec-

tators, was raised higher from the floor, and, to accommodate the players, was made broader. The separation of the actors from the audience was complete.

The proscenium now became a background, built up to represent a façade of several stories, embellished with pilasters and engaged arches and with niches holding statues. The remains of such a permanent "scene" are found in the **Theatre of Orange**, in Southern France, where what we now call the stage is 203 feet wide and 45 feet deep, framed in at the ends by return walls at right angles to the proscenium. Near the top of the walls are two tiers of corbel stones, pierced to receive flagstaffs that supported the velarium.

Baths.—Public baths, *thermæ,* were as necessary a feature of Roman cities as the amphitheatre. Rich citizens, like Mæcenas and Agrippa, set the fashion of building them, and it was followed by emperors seeking to ingratiate themselves with the populace. For the charge for admission was only a quarter of an **as**—about one quarter of a cent or half a farthing; and even this was waived by certain emperors.

The principal **Thermæ** in Rome were those of **Agrippa, Nero, Titus, Domitian, Commodus, Caracalla, Diocletian,** and **Constantine.** Many of them assumed immense proportions; the ground plan of the **Baths of Caracalla,** for example, occupying a square quarter of a mile. Besides the actual bathing conveniences, which included hot water baths, vapor baths, cooling chambers and plunges, there were rooms for ball-playing, gymnasiums, colonnades, libraries, theatres, and open courts with shade trees.

From two of the sides of the **Baths of Caracalla** projected long *exhedras,* or semi-circular recesses, furnished with benches, which are supposed to have been the meet-

ing places for the discussion of philosophy and poetry. In fact, the great thermæ were the clubs of the period; the resort of all classes, offering cleanliness to the poor, luxury to the rich, and healthful exercise and opportunity of cultured intercourse between those who desired it. And the highest skill was represented in making the walls of the various chambers and reservoirs impervious to moisture, in conducting and heating the water, and in providing flues for hot air.

Basilica.—Equally characteristic of Roman life were the *Basilicas.* These structures seem to have been intended at first to relieve the congestion of business in the various fora and to afford quiet as well as protection from the weather, for the transaction of business. The earliest in Rome was erected B. C. 184 by Porcius Cato; hence called the **Basilica Porcia.** Then followed the **Basilica Fulvia, Basilica Æmilia,** and **Basilica Julia,** the last being the largest of the five which existed during the reign of Augustus. In A. D. 112, Trajan built the great **Basilica Ulpia** in connection with his forum, and some two hundred years later was erected the vaulted **Basilica of Maxentius** or **Constantine** on the Via Sacra. In all there came to be some twenty basilicas in Rome alone.

One great interest of the basilica halls consists in the fact that from them were derived the plan and form of the early Christian churches. It has been conjectured that the plan of a basilica was derived from that of a Greek temple, the cella walls being replaced by ranges of columns, opening into the peristyle where in turn the columns were replaced by side walls. The colonnades thus became aisles to the central nave; the vestibule being retained at one end and later to be called a *narthex,* while at the opposite end an apse projected. Here in the Ro-

man basilica were the seats of the quæstor and his assessors, occupied in early Christian basilica churches by the bishop and presbyters.

The interiors of the Roman basilicas present two types of treatment. In the **Basilica of Constantine,** for example, the nave columns were attached to great piers which supported groined vaults, the thrust of which was sustained by walls at right angles to the piers. These walls divided each aisle into three *bays,* corresponding to the three bays of the nave, and over each aisle-bay was a barrel-vault, which, being at right angles to the nave, served as extra support to the nave-vaults. Light was admitted through windows in the side walls of the aisles and also through windows in the upper part of the nave, above the aisle vaults.

On the other hand, in the interior of the **Basilica Ulpia** a range of columns, supporting an entablature, took the place of the piers on each side of the nave. On the entablature rested another range of columns, surmounted by another entablature, above which walls, pierced with windows, were carried up to carry the flat, coffered ceiling. Both tiers of nave columns opened into the aisle, which correspondingly had two stories, the upper crowned with a flat ceiling.

Arches, Columns of Victory.—The magnificence of Rome and other cities was further displayed in the Triumphal Arches and Columns of Victory erected in honour of emperors and conquerors. The arch was of two types: the single arch and the three-arched. A famous example of the former is the **Arch of Titus,** which commemorated the capture of Jerusalem, A. D. 70. Examples of the three-arched type are those of **Septimus Severus,** and of **Constantine** in **Rome,** and the **Arch at Orange.** The

façades were adorned with columns of the Corinthian or Composite orders, partially or wholly detached, supporting a *broken* entablature—one, in which the uniformity of projection is interrupted by a projection over each capital. Above it is a top-story, known as the *attic*. The soffit of the arch was richly coffered and the wall spaces embellished with low-reliefs, representing incidents of triumph, while the attic bore upon its face an inscription and was surmounted by statues or a four-horse triumphal chariot (*quadriga*).

The most famous of all the pillars of victory is **Trajan's Column**, erected in connection with his Basilica. It is a column of the Roman Doric order, mounted upon a lofty pedestal, the height over all being 147 feet. The shaft, 12 feet in diameter at the base, encloses a spiral staircase of marble, while its exterior is decorated with a spiral band, 800 feet long and 3½ feet wide, carved with reliefs, representing incidents in Trajan's victorious campaigns against the Dacians. It stood originally in a court of the **Basilica Ulpia**, from the several galleries of which the sculpture could be viewed. The statue of Trajan which originally adorned the summit of the pillar has been replaced by a bronze statue of St. Peter.

A special pillar of imperial times was the Rostral Column, erected in commemoration of a naval victory and decorated with the bronze beaks or prows taken from the enemy's ships.

Palaces.—Augustus set the example of building himself a palace, choosing the Palatine Hill, to which successive emperors, particularly Tiberius, Caligula, Nero, Domitian, and Septimus Severus, made additions of increasing splendour. Nothing remains but ruins, which,

however, show that the principal apartments were as follows: the Tablinum or throne-room; Basilica, or hall of justice; Peristylium or rectangular garden-court, enclosed with colonnades; Triclinium or Banquet Hall; Lararium or domestic temple for the household gods and the Nymphæum.

A remarkable example is the **Palace of Diocletian** at **Spalato, Dalmatia,** built A. D. 300. The plan, rectangular in shape and covering an area of 4½ acres, about the same, in fact, as that of the Escoriál in Spain, seems to have been laid out on the lines of a Roman camp. A square tower occupies each of the corners, while three of the sides were pierced with entrances, flanked by octagonal towers, which were distinguished as the "golden," the "iron," and the "bronze" gateways. From these extended colonnaded roads which met in the centre, thus dividing the area into two northern sections, probably used by the principal officers of the household and the guests, and a large southern portion reserved for the imperial palace, and two temples. One of these was dedicated to **Æsculapius;** the other, circular in plan, to **Jupiter.**

The architecture was of a somewhat debased character, but offers certain interesting features of transition to the later style of the Romanesque. Thus, in the northern gateway an entablature is not employed, and the arches rest directly on the capitals of the columns.

Domestic Buildings.—The domestic architecture comprised three forms: the *domus,* or city residence of the well-to-do; the *insula,* or city tenement house, and the rich man's country house or *villa.*

The last term comprises the house and its accompaniments of beautifully laid-out grounds and gardens. On a colossal scale of magnificence was the **Villa of Hadrian**

erected at **Tivoli**, where the whole area amounted to seven square miles. It included, besides the usual palace apartments, a gymnasium, thermæ and theatre, disposed amid terraced gardens, peristyles, ornamental water-basins, and fountains.

Some idea in miniature of the luxurious villa of the Romans is to be gained from the various villas excavated in the summer resort of Pompeii, such as the **House of Pansa** and the **House of Vetius.** It comprised a rectangle bounded on three sides by narrow streets and on the fourth by the garden. The lower story contained shops, opening on to the streets, as in the case of many modern hotels. The principal entrance to the house itself was a portico through which the visitor passed into an *oecus* or reception room. On the right of this were the quarters of the kitchen and on the left was the *triclinium* or dining-room for use in cold weather. The reception-room led into a peristyle court open to the sky, with covered colonnades that afforded protection from the sun, while the rain was caught in an *impluvium* or central cistern. On one side of the court extended a row of *cubicula* or sleeping apartments, another row of which lined one side of the *atrium.* This also was an open court, furnished with an impluvium, and protected from the weather on its sides by the extended eaves of the adjacent roofs. The atrium was the public reception place in which the owner of the house interviewed his clients and transacted business. Accordingly it had a separate entrance from the street.

The walls of the principal apartments were decorated with paintings, many of which involved architectural features; the floors were laid with mosaics and the timber ceilings were probably painted and gilded, their roofs

being constructed of terra-cotta. The blocks of dwellings, called *insulæ,* seem to have anticipated our modern apartment and tenement houses, for they were carried up through many stories and housed numerous families. It is probable that they involved few conveniences, as we understand them to-day; the important necessity of water, for instance, being met by public fountains, which supplied drinking water, and by the public baths that made provision for cleanliness and health.

Bridges, Aqueducts.—Among the great public works achieved by the Romans were roads, aqueducts, and bridges; and, although these were, strictly speaking, engineering masterpieces, the use of the arch in the last two brings them within the scope of architectural grandeur. The visible signs, and indeed the symbol of Roman civilisation, were the roads which pushed their way forward to the limits of the Empire, as far as possible with a directness that swerved aside from no obstacle, and with a solidity of foundation that in many parts of the world survives to-day. And a corresponding solidity allied with the dignity of simplicity of design characterised the bridges. The best preserved in Italy is the five-arched **Bridge of Rimini,** while impressive examples are found in the favoured province of Spain; at **Cordova,** for instance, and **Toledo.**

The Romans were lavish users of water, for purposes of luxury as well as necessity. They understood the simple hydraulic law that water will rise in pipes to its own original level and applied the system in their buildings. But since pipes of lead and bronze were costly and none too durable, they dispensed as far as possible with their use, conveying the water in lofty aqueducts, with a fall, as Vitruvius recommended, of 6 inches in 100 feet, so

that the water was delivered from a height at the spot it was needed. The channel, constructed of concrete, lined with cement, was conducted upon a series of concrete arches, faced with brick; the arches being of immense height and sometimes in several tiers. The **Anio Novus**, constructed A. D. 38, was sixty-two miles in length and entered **Rome** on arches carried over the **Aqua Claudia**, which was erected at the same time and is still one of the water supplies of Rome. The finest existing example, however, is the so-called **Pont-du-Gard**, near **Nîmes**, which forms part of an aqueduct twenty-five miles long. For a distance of about 900 feet it is composed of three tiers of arches, crossing the valley 180 feet above the River Gard.

In conclusion, the genius of the Roman architect consisted in his faculty of organisation, which enabled him to take the principles of Hellenic architecture and apply them to a great variety of requirements. What his architecture lost in refinement, it more than gained in flexibility and resourcefulness, while creating for itself a distinction of structural grandeur. It refertilised the Hellenic which had threatened to become a barren style and produced a style that not only was richly competent to serve the needs of its own time, but has proved capable of being further developed to new needs. It involved principles that had their influence on Romanesque and consequently on Gothic architecture, became the source from which Renaissance architecture was evolved, and, even in our own day, are still capable of new and active service.

BOOK IV

POST-CLASSIC PERIOD

CHAPTER I

EARLY CHRISTIAN CIVILISATION

As the power of Rome waned and the Empire became disintegrated, the force of Christianity increased and spread and the organisation of the Church became consolidated. The immediate followers of Christ looked for their Lord's reappearance as a Jewish Messiah. Paul, however, taught that there was no distinction in the sight of Christ between Jew and Gentile and treated Christianity as a philosophic system of ethics, applicable to all races and conditions of rich and poor. His view prevailed and Christianity became a great proselytising force.

Its idea of a universal brotherhood appealed especially to the multitude, while men and women of the highest classes were attracted by its ideals of better and purer living. For the period was one of social unrest and of havoc of old faiths and standards of conduct. Profligacy was sapping the vitals of the state and of society, and the need of new moral ideals was insistent. "No one thing about Christianity commended it to all, and to no one thing did it owe its victory, but to the fact that it met a greater variety of needs and met them more satisfactorily than any other movement of the Age."

Its growth was further facilitated by the proselytising zeal of its adherents. Christianity spread not only throughout the Roman Empire in Europe, but also fastened upon Asia Minor and North Africa, taking firm root especially in Egypt, the intellectual centre of the Empire,

and extending even to the Germanic tribes which were to become the conquerors of Rome.

Its power, moreover, was strengthened by its organisation. In the beginning each congregation had been independent. It had its officers, deacons, who cared for its poor; elders or presbyters, who, as the council of the church, looked after its interests; and its overseer, episcopus, or bishop, the chief of the presbyters. In course of time, as the church of a given city sent out branches to neighbouring towns and rural districts, the bishop of the parent community came to have authority over a group of congregations. In time the bishops of a province learned to look for guidance to the highest religious officer of the provincial capital, who acquired the high importance of a "Metropolitan." And above him in dignity were the "Patriarchs" of such cities as Antioch and Alexandria, while the Bishop of Rome was acquiring the greatest influence. "In brief, the government of the Church was becoming a monarchy." (Botsford.)

Constantine, recognising the advantage of allying himself with such an organisation, issued in 313 the Edict of Milan, which placed all religions on an equal footing. Furthermore, to set at rest the dissensions which were threatening to disrupt the organisation of the Church, he summoned a council of the representatives of all the great branches of the Church to meet in Nicæa, to decide upon a creed which should be acceptable to all.

For with the growth of the Church, Christianity had become encumbered with doctrines that hardened into dogmas, and by this time a controversy was raging over the rival dogmas upheld by two officers of the Church in Egypt, Athanasius and Arius. Both held that Jesus Christ was the Son of God, but Arius maintained that He

had proceeded from the Father and was therefore second to the latter, while Athanasius proclaimed the absolute equality of the Father and the Son. The Council of Nicæa pronounced the latter doctrine to be orthodox and branded the Arian as heresy. The Nicene Creed, in which the orthodox was embodied, was accepted in the West, but in the East, the Arian dogma continued to be held.

Apart, however, from its bearing on this question, the Council of Nicæa was an event of profound importance. This first Œcumenical Council, or Council representative of the whole Christian world, not only was an object lesson of the widespread power of the Church, but also exalted the clergy to a high position of spiritual authority amid the temporal distractions of the time.

Constantine, upon his deathbed, accepted the Christian faith. Some fifty years later Theodosius made Christianity the sole religion of the state and the pagan temples were closed.

By degrees the spiritual power of the Church was reinforced by the temporal. The beginning of this change is sometimes dated from the act of the Frankish king, Pepin, to whom the Pope appealed to stem the attack of the Lombards, then pushing south from their possessions in Northern Italy and threatening Rome. Pepin drove them back and handed over a considerable slice of territory to the Pope, to swell the so-called "Patrimony of St. Peter." The latter, from this time on, became a source of increasing wealth, which enabled the Popes to maintain armies and play the part of princes in the world of politics.

Meanwhile, the temporal power of the Western Church, centred in the Papacy, had been helped by Constantine's

removal of the capital of the Empire to Constantinople. Two circumstances contributed to the change. By this time the Senate had lost even the semblance of authority, and the real source of government was in the consent of the armies. Secondly, the frontiers chiefly threatened were the eastern ones. Constantine accordingly selected as the site of a Nova Roma, the ancient Greek city of Byzantium. It, too, had its seven hills, occupying a promontory between the Golden Horn and the Sea of Marmora, a spot defended, as well as beautified, by nature and already an important gateway of commerce, both by sea and land, between Europe and the East. Constantine planned the new city of Constantinople on extensive lines and set an example of magnificent building that was continued by his successors; so that Constantinople continued for a thousand years to be the Eastern bulwark of European civilisation, until it was conquered by the Moslems in 1453.

Among the results of this change of the capital was, firstly, that the Empire gradually separated into East and West; secondly, that Constantinople became the centre of culture, and, as darkness settled down upon the West, the almost sole refuge of learning and the arts. In the beginning Roman architects directed the character of the new city, but even then the artisans who executed the work were either Byzantines or Greeks, attracted to the new city from various parts of Hellas and Asia Minor. In consequence architecture and the other arts gradually became impressed with a new character, which, for convenience' sake, is styled Byzantine. It represents, in the case of architecture, a mixture of Roman, Greek, and Oriental; and involved, as we shall see, the treatment of old principles in a new spirit of invention.

The change was encouraged by the contact of Byzantium with Eastern and African civilisation. For as the Western Empire declined in power, the Eastern grew; extending its sway in Asia, where it came into conflict with the Parthians and Persians, and along the northern littoral of Africa. The Metropolitan Bishop of Byzantium became to the Eastern Churches what the Metropolitan Bishop of Rome was to the Western; and exercised a spiritual headship over the Coptic Church in Alexandria, the Syrian Church in Antioch, the Nestorian Church in Ctesiphon, and the Armenian in Asia. Over this widely spread area religious art flourished, coloured in each locality by racial influences, all of which influences in a measure reacted upon the capital city of Byzantium.

Meanwhile, in the West, the Church was labouring to reorganise a settled condition of society by assisting the consolidation of authority. A case in point is the welding of the Frankish tribes into some semblance of a nation. By 486 they had found a great leader in Clovis, who led them across the Rhine, conquered the Romans at Soissons, and proceeded to extend his sway over Gaul. To consolidate his power he married Clotilda, a princess of the Burgundian Goths, and accepted her faith of Christianity. It chanced that she professed the orthodox belief, unlike the majority of the Burgundians and the other German tribes at this time in Gaul, who were Arians. Consequently the Roman Church threw the weight of its influence on the side of Clovis and helped him to found a monarchy in France that endured under the title of Merovingian, so called from Merovech, the grandfather of Clovis.

In time the vigour of the Merovingian kings declined, until the actual power was wielded by the steward of the

royal household, the Mayor of the Palace. Gradually this office became hereditary in a dynasty of rulers known as Carolingian or Charles Dynasty. The first great Charles was Mayor Charles, surnamed Martel or the Hammer; the last, Charlemagne, or Charles the Great. The former derived his name from the crushing blows he inflicted upon his enemies, particularly the Saracens, the followers of Mohammed, who by this time (732) had replaced the Vandals along the north coast of Africa, conquered the Visigoths in Spain, and were threatening France. Charles met them at Poictiers or Tours, and in a complete victory saved Christianity to Europe.

Charles remained simply Mayor; but the title of King was assumed by his son, Pepin, who was first elected by the Franks and then anointed by the Church, thus ascending the throne with the consent of the Pope. We have already noted how he repaid the debt. He was succeeded by his son Charlemagne, whose dream was to found an empire upon the ruins of the Roman. It was fulfilled to the point that he extended Frankish sway over Germany, as far as the Elbe, and into Italy. In the last named country he conquered the Lombards and signalised the completeness of the conquest by assuming the iron crown of Lombardy. On Christmas Day, A. D. 800, as he was kneeling at prayer in the Church of St. Peter in Rome, Pope Leo III crowned him Emperor of the Romans.

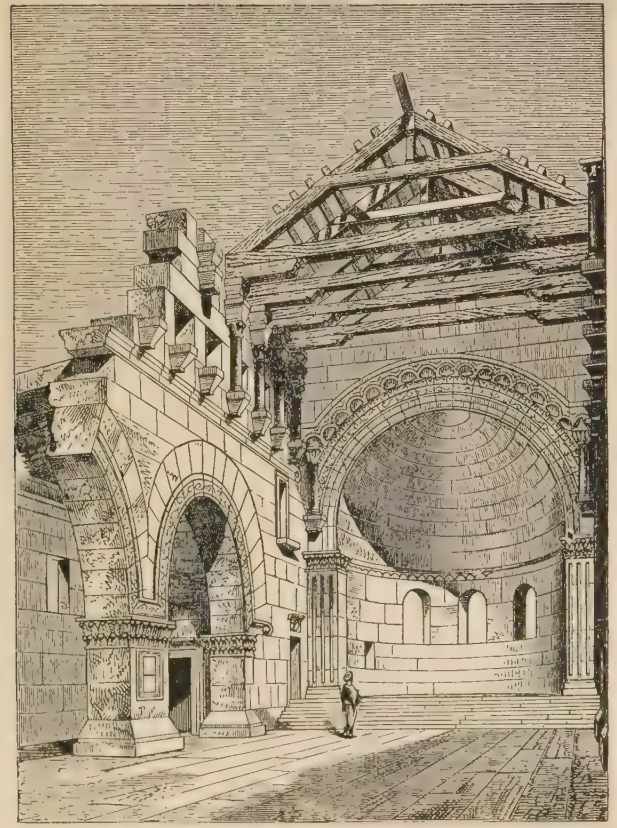
It was the aim of Charlemagne to establish his government on Roman lines, to which end he reintroduced Roman laws and methods of civilisation and ordained that Latin should be the official language. The city selected as his capital was Aachen—Aix-la-Chapelle.

S. APOLLINARE NUOVO, RAVENNA

Showing Classical Columns and "Impost"; Mosaics; Arch of Triumph and Apse. P. 201

S. APOLLINARE-IN-CLASSE, RAVENNA

Exterior of Apse. Detached Campanile. P. 201



CHURCH OF KALB-LAUZEH, SYRIA

Showing Apse, Wooden Roof, Supported by Small Columns on Corbels; Round Arches on Piers. P. 200

CHURCH OF TURMANIN, SYRIA

Rudiments of Subsequent Romanesque and Gothic Treatment of West Front. P. 200

CHAPTER II

EARLY CHRISTIAN AND BYZANTINE ARCHITECTURE

When the "Peace of the Church" had been proclaimed by Constantine and Christians were able to worship openly, the age of church-building commenced, the Emperor himself setting a lead. After the edict of Theodosius, making Christianity the State religion, many of the pagan temples were adapted to the purposes of the Christian ritual, or their columns and decorative features were appropriated for the building of new churches. The former practice accounts for the preservation of the Parthenon, Erechtheion, and the Temple of Theseus at Athens. An instance of the method of conversion is to be traced in the **Cathedral of Syracuse, Sicily,** which occupies the site of an ancient temple. Walls were built between the Doric columns of the peristyle, while the walls of the cella were pierced so as to communicate with the peristyle, which thus served as aisles. Another instance is that of a temple in **Aphrodisias,** in Caria, Asia Minor, where the walls of the cella were entirely removed, and walls were built outside the peristyle to form aisles, while to increase the length of the nave the front and rear portico columns were set in line with the others.

Basilican Plan.—These changes coincided with the general adoption of the basilica plan in the case of new buildings. For the early Christian churches show very little regard for the appearance of the exterior. Attention was concentrated on the interior, in fitting it for ritual wor-

ship and in beautifying it, and to both these objects the basilica plan most readily contributed.

The earliest example in Rome of a church so planned is that of **St. John Lateran,** which, however, has been completely remodelled by subsequent additions. The next in point of time was the **Cathedral Church of St. Peter,** erected near the spot in which the saint was martyred in the circus of Nero. It was torn down in 1506 to make room for the present cathedral commenced by Julius II; but the appearance of its principal façade is known from Raphael's mural painting "Incendio del Borgo," in the stanze of the Vatican, and there is a record of its plan. The latter shows that the basilica building was approached by an atrium, surrounded by either colonnades or arcades, enclosing a rectangular space, open to the sky and having a fountain in the centre. With the water the worshippers sprinkled themselves, a symbol of purification still preserved in the "holy-water" vessel, placed inside the entrance of Roman Catholic churches.

The end arcade, abutting on the church proper, was used by penitents and called the *narthex.* The body of the church was divided, as in the basilica halls, into central nave and side aisles—the latter sometimes double. Across the end of the nave extended the *bema* or sanctuary, corresponding to the space raised and enclosed for litigants and lawyers in the basilica. Its ends projected beyond the line of the main building, forming rudimentary transepts, which may have been used as sacristies for the robing of the clergy and the preservation of the sacred vessels and other ritual objects. The central part of the bema was elevated and occupied by the altar which was surmounted by a *baldachino* or canopy, supported on four

columns. Behind the altar was the apse, lined with seats; those of the Roman assessors being now occupied by the presbyters, while the centre one of the quæster or prætor became the bishop's throne. For the transference of the latter to the side of the choir was of later date.

The officiating priest stood behind the altar, facing the congregation and the east. For as yet the main façade was not the western, a fact of interest when we recall that while the Hellenic architects built facing the four points of the compass and made the chief entrance on the east, the Romans were indifferent to the matter of orientation.

In certain instances as that of **S. Clemente**, in **Rome**, the accommodation for the choir projected from the bema into the nave. It was enclosed with low screen walls called *Cancelli* (whence was derived the word chancel); the side walls projecting to afford space for two reading desks, or *ambones;* respectively, the Gospel *ambo* and the Epistle *ambo.*

Treatment of Columns.—There were two ways of treating the columns. In the earlier type of churches, the aisles were spanned by arches, while those of the nave supported an entablature. But this necessitated a narrow intercolumniation, considerably obstructing the view. Accordingly, the practice ensued of placing the columns further apart and surmounting them with arches. The first example of this use of *arcades* in a nave is believed to occur in the northern gallery of the **Palace of Diocletian** in **Spalato, Dalmatia.** Both methods continued to be employed and were sometimes combined in the same building. Over the entablature or arches, as the case might be, was a high stretch of wall, rising above the level

of the aisle roof, pierced with a row of *clerestory* windows. The nave and aisles terminated in arches, that of the former, the principal entrance to the sanctuary, being called the Arch of Triumph. The roofs were of timber; that of the nave rising to a ridge and finishing at each end in a gable, while a slope from below the clerestory covered the side aisles. The construction work of the roofs was usually hidden in the interior by flat ceilings, beamed and coffered.

The decoration of the interior included the use of antique columns, which were sometimes adapted to their new place by cutting down or removing the bases. The walls above the nave arcading or entablature were adorned with mosaics, which also embellished the space above the Arch of Triumph and the semi-dome of the apse. The floors were covered with geometric patterns of marble sliced from columns and other antique fragments.

The principal examples of basilican churches, still existing in **Rome**, are **St. Paul-without-the-walls**, **S. Clemente** and **S. Maria Maggiore.** The first named is of modern construction, completed in 1854, but preserves the plan and dimensions of the older church which was destroyed by fire in 1823. It had been begun in 380 by Theodosius, on a plan closely following that of the old St. Peter's, except that the transepts of the bema project less and the atrium was abandoned, leaving only the narthex. Its construction and embellishment were continued by other emperors and by many popes, the munificence of the latter being commemorated in a series of portrait medallions of the popes which extends in a band above the arcade-arches on each side of the nave. The wall space above them is veneered with rare marbles,

enclosing panels filled with paintings representing incidents in the life of St. Paul. Amid the somewhat extreme sumptuousness of the interior a feeling of the older character of a basilican church is preserved in the mosaics of the fifth century which adorn the arch of triumph, and in those of the apse which date from the early part of the thirteenth century.

S. Maria Maggiore presents an original basilican plan of nave and single aisles, from each of which during the Renaissance was built out a square side chapel, surmounted by domes, giving the plan the form of a cross. But the interior of the nave dates from the time of Sixtus III in the fourth century and shows on each side a series of Ionic columns, supporting an entablature. Above this, as also over the arch of triumph, are mosaics of the fifth century.

The **Church of S. Clemente** is notable for the retention of the atrium and also for the termination of the aisles in apses, a feature which suggests Byzantine influence.

Circular and Polygonal Plans.—In addition to the basilican buildings of this period were some which involved a circular or polygonal plan, suggested probably by the circular temples and tombs of the Romans. They were applied in the early Christian era both to tombs, which in some cases were afterward converted into churches, and to baptistries. The latter were independent buildings, so called from their use at first solely for the sacrament of baptism. In later times, however, it became the custom to place the font inside the church; yet as late as the eleventh century was erected the famous **Baptistry of Florence**, in which even to this day every child born within the city is baptised.

The examples in Rome of circular or polygonal build-

ings are the Baptistry which forms part of the group of buildings of **S. John Lateran,** the **Tomb of S. Constanza,** the daughter of Constantine, which was converted into a church in 1256, and the church of **S. Stefano Rotondo.**

The general character of the Roman tomb was a circular mass, superimposed on a square podium. The cylindrical mass was sometimes decorated with pilasters, supporting an entablature, and occasionally was surrounded by a peristyle, while its roof was apt to be conical.

In early Christian architecture this principle of construction was developed. The peristyle was enclosed by outer walls, and the lower part of the walls of the cylindrical mass was replaced by columns. Thus, in the **Baptistry of S. John,** which has been called the **Baptistry of Constantine,** the conical roof is supported by a circle of eight columns, in two stories.

The **Tomb of S. Constanza** has a dome which is supported on twelve pairs of granite columns, while the wall of the circular aisle is inset with sixteen recesses, alternately apsidal and rectangular in shape, one of the latter being opened through to form the entrance. The sarcophagus of the saint which formerly occupied one of the niches, is now in the Vatican Museum. Its sides are carved with genii gathering grapes—a motive which is also represented in the mosaics that adorn the vaulting of the church's circular aisle.

S. Stefano Rotondo, though much reduced from its original size, is said to be still the largest circular church in existence. The wall of the cylinder, surmounted by a wooden conical roof, is supported on a circular entablature, carried by antique columns. It was surrounded, when built by Simplicius in the fifth century, by double circular aisles, covered by a sloping roof. The latter was

had dried and settled, the masons and the decorators completed the work, by overlaying the walls, domes, and pediments of the interior with marble or mosaics.

The floors were paved with richly coloured marbles, in *opus sectile* or *opus Alexandrinum*. Marble, also, cut in thin veneers and arranged so that their veining produced symmetrical designs, was applied to the walls. Marble, again, but incised with carved ornament, covered the soffits of the arches, the archivolts, and spandrels, while the vaulting was resplendent with mosaics, composed of figures and ornaments, executed in enamelled glass upon a background of gold or blue or, more rarely, pale green.

Colour was pre-eminently the motive of the interior decoration and to this end carved work was subordinated. The ornament was in very low relief, spreading over the surface in intricate patterns, that suggest the delicate enrichment of lace. Mouldings were replaced by bands of mosaic or marble, carved or smooth. The chief motive of the carved ornamentation was the mingling of the acanthus and anthemion. The treatment of both was rather Hellenic than Roman; the foliage having pointed ends; but it was deeply channelled and drilled with deep holes at the springing of the leaves. In fact, the use of the drill as well as the chisel was characteristic of Byzantine carving and emphasises the suggestion of the ornament being raised rather than, as in Roman decoration, applied. Corresponding to the general flatness of the ornament is the constraint of the contours of the mouldings, suggestive of Asiatic languor and in marked contrast to the vigorous profiles of classic architecture. The impression, indeed, of the whole scheme of decoration is rather one of soft richness, as carving melts into colour

and colour deepens and glows and finally passes into the gold or depths of azure of the vaulting.

When the supply of antique columns was exhausted the Byzantine architects began to imitate them, but soon departed from the classic type. In certain cases the capital retained something of its derivation from the Ionic or Corinthian styles; but gradually a new type was evolved, which was distinguished by being convex to the outside rather than concave. The motive appears to have been to give additional support to the arch, for which purpose an *impost* was, as the name implies, "placed upon" the capital. It consists of a block, which projects beyond the edges of the capital to fit the extra thickness of the wall and may represent, as has been suggested, the survival of a part of the architrave of the discarded entablature. In the decoration of the capitals the foliage was sometimes enclosed in frames of interlace, or the latter took the form of a basket, on which birds are perching.

Pendentive Dome.—We have now to consider the most characteristic feature of Byzantine architecture—the Dome. Briefly, in the 200 years that divided Justinian from Constantine the Byzantine architects perfected a principle of dome construction by which they crowned a square plan with the circle of a dome.

The Romans confined their domes to circular or polygonal buildings. Meanwhile they had worked out the construction of groined vaulting upon four supports. The Byzantine achievement was to make four supports carry a dome. It was accomplished by developing the element of construction—the *pendentive*.

We have already noted the bas-relief found at Koyunjik, which shows that the Assyrians understood the crowning of small square buildings with domes. While

actual examples have perished, the tradition of this construction seems to have survived in the East. For in the third century A. D., when the Persians established the Sassanian Empire under the impulse of a movement that sought to restore the ideals and habits of the old national life, the builders erected domes in the palaces of Serbistan and Firuzabad.

The method they adopted was to bridge each angle of the square, at some distance below the top, with a small arch. On these they erected two small arches that projected beyond the face of the original arch and accordingly extended the width of the bridge. They continued this process of superimposing tier upon tier of arches, until the bridge was level with the top of the square, by which time the latter was transformed into an octagon. Then, by inserting a *corbel* or bracket in each angle of the octagon and taking advantage of the thickness of the masonry, they were able to adjust a dome to the structure. This system of dome-support, we shall find, was adopted in Gothic architecture, where the arches are called *squinches.*

Another method of dome-support, found in the **Mosque of Damascus** and frequently employed in the churches of Asia Minor, was to bridge the angle with a semi-circular niche.

Meanwhile what the Byzantine architects developed was a geometrically exact system of converting the square into a circle by means of concave triangular members that are specifically called *pendentives.*

The character and function of a pendentive may be readily grasped by a practical experiment. Cut an orange into two hemispheres. Lay the flat of one on four reels, placed at the four angles of a square, inscribed

within the circle. These reels represent the piers on which the pendentives are to be constructed. Now by four perpendicular incisions of the knife cut off the segments of the hemisphere that project beyond the square. The lateral spaces between the piers will now be spanned by four arches. Finally, a trifle above the top of the arches, make a horizontal cut, removing the upper part of the hemisphere. The rind which remains represents the four pendentives. The flesh inside of it may be likened to the timber centering used in the construction of the pendentives and, now that the latter are completed, may be removed. Remove also the flesh from inside the upper part of the hemisphere. It will then be a hollow cap, which you can replace on the top of the pendentives. You now have an instance of a dome and pendentives included in a single hemisphere. More usually, however, the architect makes the curve of the dome different from that of the pendentives. Frequently, too, to give the dome superior distinction, he constructs a cylindrical wall on the circle of the pendentives, and on this *drum,* as it is called, elevates his dome.

Scientifically stated: "If a hemisphere be cut by five planes, four perpendicular to its base and bounding a square inscribed therein, and the fifth parallel to the base and tangent to the semi-circular intersection made by the first four, there will remain of the original surface only four triangular spaces bounded by arcs of circles. These are called pendentives." (Professor Hamlin.)

The first church built by Justinian was **SS. Sergius and Bacchus** in **Constantinople.** The part dedicated to the latter saint—a small basilica—was destroyed by the

Turks. The remainder presents the plan of a rectangle enclosing an octagon on which rests a dome of a curious, fluted, melon shape.

A few years later was erected the church of **S. Vitale** in **Ravenna**, probably as the Court Church. Its plan is an octagon within an octagon; the inner one being surmounted by a dome.

The domical arrangement of both these churches may have been originally derived from the **Pantheon**, modified by the example in Rome, of what is called the **Temple of Minerva Medica**, though it was probably a nymphæum. This building is decagonal with niches projecting from nine of the sides, while the tenth provides the entrance. The dome, of concrete ribbed with tiles, is built over an inner decagon of ten piers carrying ten arches. These in turn support a decagonal drum, pierced with windows, the angles at the top being filled in with rudimentary pendentives. The same principle of construction reappears in both **S. Sergius** and **S. Vitale**; the dome of the latter being composed, for the sake of lightness, of earthenware, amphora-shaped pots, the bottom of one being fixed in the lip of another. It is sheathed on the outside with a wooden roof.

This **Church of S. Vitale** became the model on which Charlemagne based his domical church at **Aix-la-Chapelle**, which was built as a royal tomb, A. D. 796–814, and was afterward used as the crowning-place of the Emperors of the West.

S. Sophia.—Finally, the pendentive system was fully developed in Justinian's church in Constantinople dedicated to the **Holy Wisdom—Hagia Sophia**, called, though erroneously, **S. Sophia**. It marks the highest development of the Byzantine genius for domical construction.

The architects were Anthemius of Tralles and Isidorus of Miletus, who began the work in 532 and finished it in 537. The plan shows four mighty piers, 25 feet square, set at the angles of a square of 107 feet. These support four arches and intermediate pendentives of noble height, the apex of the dome being 175 feet from the pavement. For the original dome, having collapsed in 555, was replaced by a higher one, lighted by the introduction of forty circular-headed windows around the spring of the curve; an arrangement not only excellent in admitting light to the interior, but also as wonderfully impressive in its way as the single eye of the **Pantheon.** Rows of small circular headed windows are also pierced in the screens which fill in the north and south arches.

Abutting on the east and west arches of this central mass are semi-domes, supported upon the central piers and two others. And from these project, as in **S. Sergius** and **S. Vitale,** small semicircular domes, sustained by an upper and lower story of arcades. Thus was created a vast oval-ended hall, 267 feet long by 107, from every part of which the summit of the dome is visible.

Outside this central feature are two side-aisles, each having two stories, separated from the nave by arcading and formed of a series of columns and vaulting. As in all Early Christian and Byzantine churches which have upper and lower galleries, the former were occupied by women worshippers. The outer walls on the north and south sides, as the plan shows, are reinforced by immense buttresses, 25 feet wide and 75 long, which appear on the outside of the buildings like huge pylons. On the inside they are pierced with arches on each story. These buttresses withstand the thrust of the dome which is reinforced on the east and west by the semi-domes.

The edifice, which occupies practically a square, is approached on the west side by a narthex of magnificent proportions, 200 feet long by 30 wide, which is divided like the aisles into an upper and lower story. So far "the plan resembles that of **S. Sergius**, if the latter were cut in half and a dome on pendentives inserted over the intervening square and the whole doubled in size." In front of the narthex, however, extends a second one, opening, as in some of the basilican churches, into an atrium.

The exterior walls are faced with alternate courses of brick and stone and the domes, all of which are visible, are covered with a sheathing of lead.

S. Mark's, Venice.—S. Sophia is a marvel not only of construction but also of unity of design. It is in this respect, among others, that it is superior to **S. Mark's** in **Venice**, which was erected by Byzantine builders at the end of the eleventh century. Venice, like Ravenna, was in close touch with Constantinople and when she determined to build a cathedral to her patron saint, to replace an earlier basilican church destroyed by fire, it was natural that she should look to that city for the character of the design as well as for artists and artisans to execute it. The actual model was the **Church** of the **Holy Apostles**, in Constantinople, founded by Constantine, rebuilt by Justinian, and destroyed by the Turks in 1463 to make room for the mosque of Sultan Mahomet II.

The plan is a Greek cross, that is to say, a cross with the four parts of practically equal length, grouped around a central square. Each of the five divisions is crowned by a dome, supported on pendentives and reinforced by transverse barrel vaults. The transept and choir domes are slightly smaller than the ones over the crossing and the nave, because of the restrictions of space caused by

the chapel of S. Isadore in the north transept, the Ducal Palace on the south, and the retention of the apse of the ancient basilica. Originally all the domes were sheathed externally with lead, but at a later date were covered with the lead-sheathed wooden lanterns now existing. With their high-pitched curves and ornamental terminals they represent a serious deviation from the true Byzantine style.

A similar departure from the latter is exhibited in the west façade. This was completed in the fifteenth century and involves a curious mixture of Orientalism and fanciful Gothic with features, such as the clusters of columns in two tiers, flanking the five entrances, which serve no structural purpose and have no architectural justification. They are purely picturesque. But **S. Mark's** was the city's shrine, to which each succeeding century added some embellishment and often with more zeal than discretion.

It is the interior rather that commands our admiration. For notwithstanding certain distractions, even here, of later debased styles of mosaic, enough of the tenth and eleventh century embellishments remain to dignify the decoration. And in no other building in the world is there so marvellous an ensemble of coloured marbles, alabaster, and glass mosaics; or such subtleties, delicacies, and complexities of light and shadow.

Greece and Russia.—In Greece and Russia the Byzantine has continued to be the official style of the Greek Church. In Russia, however, many fantastic elements have been introduced, particularly the bulbous form of the domes.

As an example of domestic Byzantine architecture may

be mentioned the **Monastery of Mount Athos** on a promontory of Saloniki, overlooking the Ægean Sea.

"In Armenia are also interesting examples of late Armeno-Byzantine architecture, showing applications to exterior carved detail of elaborate interlaced ornament, looking like a re-echo of Celtic M.SS. illumination, itself, no doubt, originating in Byzantine traditions." (Hamlin.)

CHAPTER III

MUHAMMEDAN, ALSO CALLED SARACENIC CIVILISATION

The introduction at this point of Muhammedan or Saracenic architecture unfortunately breaks the continuity of the evolution of Early Christian and Byzantine architecture into the Romanesque and thence into the Gothic. Accordingly, some writers reserve this chapter until the end of their book, treating it as an independent interlude.

That method, on the other hand, has the disadvantage of not giving the subject its proper place in the sequence of history; and since an important motive of the present volume is to represent the growth of architecture as the product of changing conditions of civilisation, it seems more in accordance with this aim to let the conditions govern the order in which the architectural phases are presented. So, in the inevitable choice between two evils of arrangement we will select that which, from our point of view, seems to be the least.

For it is true that Muhammedan or Saracenic civilisation represents but an interlude in the progress of Christian civilisation. What, however, would have been the outcome, if Charles Martel, in 732, had not crushed the advance of the Muhammedans into France? They might have fastened upon the latter as they had upon Spain, the north of Africa, Egypt, Syria. From France they might have descended upon Italy, and gradually drawn tighter the circle of their conquest until the Western as well as the Eastern Empire was entirely in their grasp. It needs but a little effort of imagination to realise that

on the issue of the battle of Poictiers hung the fortunes of Europe; the survival of European civilisation and possibly the continuance of Christianity.

In fact, what was trembling in the balance was the extension of a new and vigorous power over a social order that, except in the Frankish kingdom, had grown more and more disintegrated and feeble. For in the decline of Rome even her conquerors had been involved; the various other Gothic nations in adapting the decay of her system had been corrupted by it. The only unifying and uplifting force that glimmered amid the general prostration was that of the Church, which might have been engulfed in Islamism if the Franks had not prevailed at Poictiers.

For in the present day we associate Islamism with the unprogressive nations, whereas in the eighth century it was the symbol of progressiveness. Its spiritual ideal was, at least, as high as that of Christianity; while its intellectual and material ideals were superior to those of Europe.

Shall we speak of Saracenic civilisation or Saracenic architecture as some do, or follow the example of others who substitute the term Muhammedan? The former word was probably derived from the Latin *Saraceni,* which was employed by the Romans to designate the Bedouins who roamed a part of the Syro-Arabian desert, and committed depredations on the frontier of the Empire. In the Middle Ages Saracen came to be used as a general term for Moslems, especially those who had penetrated into Spain. This latter use is too narrow, while the general use conveys no meaning.

Muhammedan, on the other hand, implies a follower of Muhammed or Mahomet, and it was the oneness of

faith that first united the Arab tribesmen and in time gave a uniformity of ideal to their spread of conquest from the Pillars of Hercules to Northern India. While the character of the civilisation varied throughout this vast empire, being coloured by local and racial characteristics that reacted on the styles of architecture, it was everywhere impregnated with one belief. There is no god but Allah and Muhammed is his prophet.

Muhammed was born about 570 in Mecca, in the Arabian peninsula; a place hitherto of little importance, which had a cube-shaped sanctuary, the Kaaba, enshrining a Black Stone. It was the token or fetish of some god of nature; for some kind of nature worship, including the worship of the Sun, Moon, and Earth seems to have been the traditional religion of Arabia. Meanwhile, Judaism had penetrated into the country and Christianity had followed. Each figured in Muhammed's imagination as a world religion. Both professed one God. One had its prophets; the other, its Messiah, and both its book of inspired revelation.

Accordingly, when the vision of Muhammed embraced the idea of founding at once a new nation and a new religion, he borrowed from both Judaism and Christianity and proclaimed himself the new prophet or Messiah of the one God and made known the New Revelation, which was embodied in the Koran. The faith of Islam, as preached by Muhammed and practised by him and his followers, was essentially one of proselytising by force. "The sword," he taught, "is the key of Heaven and Hell. A drop of blood shed in the cause of God, a night spent in arms, avails more than two months of fasting and prayer. Whoso falls in battle his sins are forgiven. At the Day of Judgment his wounds shall be resplendent

with vermilion and odoriferous as musk, and the loss of limbs shall be supplied by angels' wings."

Muhammed's self-imposed task of subjugating and uniting Arabia for the Arabians was begun after his flight from Mecca to Medina, the celebrated *Hejira* (Arab *hijra*) which occurred on the Jewish Day of Atonement, Sept. 30, A. D. 622. The further work of conquering the countries on which the Arab tribes had been dependent, Syria, Abyssinia, Persia, was continued by his followers.

Of great importance in the history of architecture was the conquest of Persia (632–651), for here the Muhammedan influence developed a style that was distinguished by fine structural as well as æsthetic qualities and generally developed a beautiful revival of the various arts of decorative design. And it was Persian Muhammedan that strongly influenced the architecture of India, where Muhammedan conquest was established about A. D. 1000.

Meanwhile, the Arabic Muhammedans had founded a dynasty under the Ommayads with its capital in Damascus and a later one under the Abassids, whose most celebrated caliph was Haroun-el-Raschid of Bagdad, made famous by the "Thousand and One Nights." Conquest was extended westward, gradually comprising Egypt, the north of Africa, Sicily, and Spain.

In 1453 the Crescent displaced the Cross in Constantinople.

Yet, notwithstanding the divisions of the Muhammedans and the immense distances separating them, a unity not only religious but also intellectual was maintained. The Muhammedans learned rapidly from the peoples they conquered and established for the diffusion of learning a sort of university system of travelling scholarships. Aided by Arabic as the universal lan-

guage of learning, students journeyed from teacher to teacher, from the Atlantic to Samarcand, gathering hundreds of certificates. The education was designed to turn out theologians and lawyers; but theology included studies in metaphysics and logic, and the canon law required a knowledge of arithmetic, mensuration, and practical astronomy.

Technical education was maintained by gilds who perpetuated the "mysteries" of the craft through a system of apprenticeships. And it is to be noted that there was no distinction made between so-called arts and so-called crafts. The gild-system covered all kinds of constructive work from engineering to the making of a needle, and if the work permitted elements of beauty and decoration these were, as a matter of course, included. Hence the proficiency and inventiveness and exquisite perfection of workmanship displayed by the Muhammedan craftsmen.

But their Koran enjoined a literal obedience to the Mosaic law against "the making of any graven image, or the likeness of anything that is in Heaven above or in the earth beneath or in the waters under the earth." Accordingly, there were no sculptors or painters in the full sense of the term; only decorators of moulded, engraved, or coloured ornament, the motives of which were confined to conventionalised flower and leaf forms and to geometric designs of practically endless variations of the straight line and curve, in meander, interlace, and fret, into which they often wove texts from the Koran or the sacred name of Allah. It is to these designs by Arab artists, influenced to some extent by Byzantine, that the term *arabesque* was first applied.

Meanwhile it was the practice of Muhammedanism to

absorb as far as possible the traditions of each nation it conquered. Gradually, therefore, the strictness of its orthodoxy was modified. In Persia, for example, the representation of animals was permitted in the arts of design, and the representation of human beings followed.

Similarly, the architectural style of each locality was affected by the previously existing architecture. The examples which remain are chiefly of mosques, tombs, houses, and palaces.

The word mosque comes to us through the French mosquée; the Spanish equivalent is mesquita, while the Arabs call the "place of prostration"—*masjid.* The nucleus of every one is the *mihrab* or niche in a wall, indicating the *kibleh* or direction of the Great Mosque at Mecca, with its shrine, the Kaaba. Beside the mihrab was a pulpit, *mimbar,* for preaching, and sometimes in front of it, for the reading of the Koran, stood a *dikka* or platform raised upon columns. Shelter for the worshippers was provided by arcades, which in the immediate vicinity of the mihrab were often enclosed with lattice work, thus forming a prayer-chamber—*maksura.* The size of the mosque was indefinitely enlarged by the addition of more arcades, surrounding usually an open court, in the centre of which, as in the atrium of the Early Christian basilicas, was a fountain for ritual ablution.

The tomb was usually distinguished by a dome and during the lifetime of its founder served the purpose of a pleasure-house; corresponding somewhat to the Roman nymphæum, and, as in the case of the Taj Mahal, set in the midst of a beautiful system of gardens, water-basins, and terraces.

In his house also the Muhammedan jealously guarded his domestic privacy. He followed the Romans in leav-

ing the exterior of his house plain, while centering all its luxury and comfort around an open interior court. Special quarters were provided for the women and the seclusion of their lives within the harem led to two features which are characteristic of Oriental houses, the balcony and the screen. That the occupants might take the air, balconies were built out from the walls both of the court and the exterior; and screened with lattice work, on the designs of which great skill and beauty were expended.

The palaces represented the extension of the house-plan by the addition of halls of ceremony. Sometimes, as in the case of the Alhambra, they combined the character of a citadel, and were always generously supplied with water, as well for the ablutions enjoined in the Koran, as for purposes of beauty. The Arabs, in fact, readily learned the Roman methods of engineering and hydraulics and in their houses and cities and in the irrigation of land carried the system to a high degree of perfection.

The system by which learning and culture circulated throughout the Muhammedan world was illustrated in the spread of the arts of design. Persia, for example, was a centre of the ceramic art, and wherever the Muhammedan civilisation spread, the art of pottery was revived and took on new and distinctive splendour. Enamel colours of the purest tones and finest translucence were developed and the glazes were distinguished by extraordinary lustre. They were lavished not only on vessels of practical service but also on tiles for the decoration of walls.

With equal originality the Muhammedan artists developed the metal crafts both in the direction of temper-

ing the metal and in its decoration; introducing and carrying to a wonderful pitch of perfection the engraving, encrusting and inlaying of the surfaces with ornamental designs; a process known as damascening, since Damascus was the earliest important centre of the craft.

Further, in weaving they developed a corresponding skill and feeling for design. Rugs and carpets, laid on the floor or spread over doorways, were the chief furnishing of a Muhammedan home, while a small rug was carried by the worshipper or his servant to the Mosque to protect his bare feet while he prayed. These "prayer rugs" were frequently embellished with a representation of a mihrab, enclosed in borders bearing Koran texts, and were of silk of finest weave; that is to say, with an extraordinary number of knots to the square inch. There is a fragment of silk weave in the Altman collection at the Metropolitan Museum, of Indian craftsmanship, each square inch of which embraces 2500 knots.

In a way, however, the very exquisiteness of Muhammedan craftsmanship prepared the way for its decay. It originated in the limitation of motives permitted to the decorator, who in consequence had to satisfy his love of perfection by resort to delicacies and intricacies of design beyond which there was no further possibility of creative invention.

CHAPTER IV

MUHAMMEDAN ARCHITECTURE

The Koran prescribed that every believer when praying should face toward Mecca. This could be done as readily in the open desert as in a building, so the early mosques were probably of little importance. It was only as the Arab tribesmen extended their conquests to the neighbouring civilisations and came in touch with the temples of antiquity and the churches of the present, that they began to raise handsome places of worship for their own religion.

As Muhammedanism spread eastward through Syria to Persia and later to India and westward into Egypt, along the northern shore of Africa into Spain and finally occupied Constantinople and Turkey, it absorbed much of the civilisation of each country and employed the constructive methods, the workmen, and the materials which it found ready to hand. Consequently, the architectural expression of Muhammedanism, while retaining everywhere certain essential characteristics, varies locally. It offers notable distinctions according as it is found in Syria, Persia, India, Egypt, Spain, and Turkey.

Mosque of Mecca.—The **Great Mosque of Mecca**, called by Moslems the Haram El Masjid el Haram, or Baisullahi el Haram, the "House of God, the Prohibited," represents a succession of additions, extending from early Muhammedan times to the middle of the sixteenth century. It comprises an enclosure, 300 yards square, the walls of which are pierced with nineteen gateways and

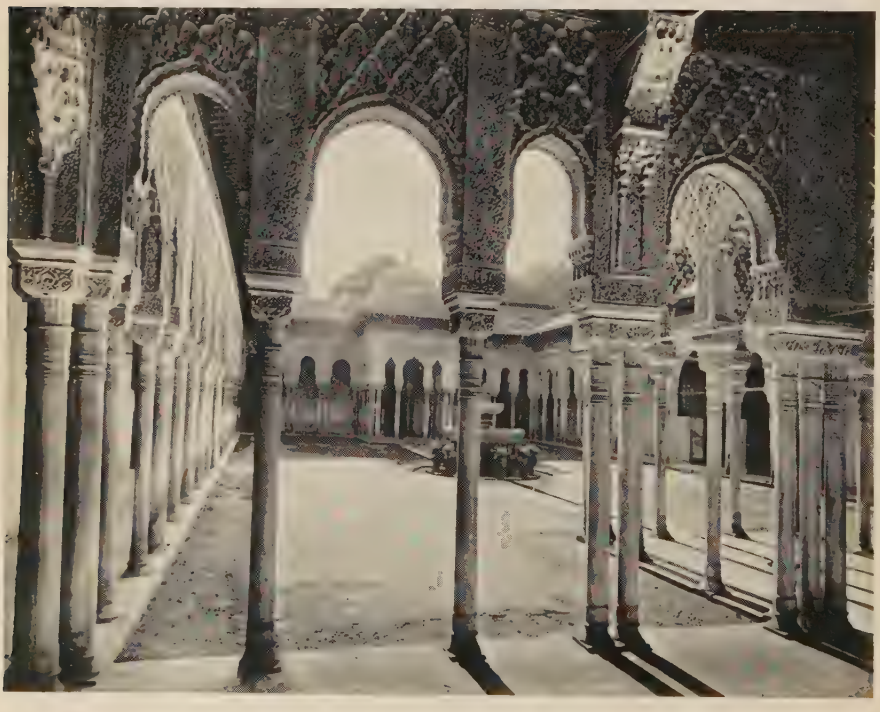
MOSQUE OF EL AZHAR, CAIRO

Showing Egyptian Types of Minarets

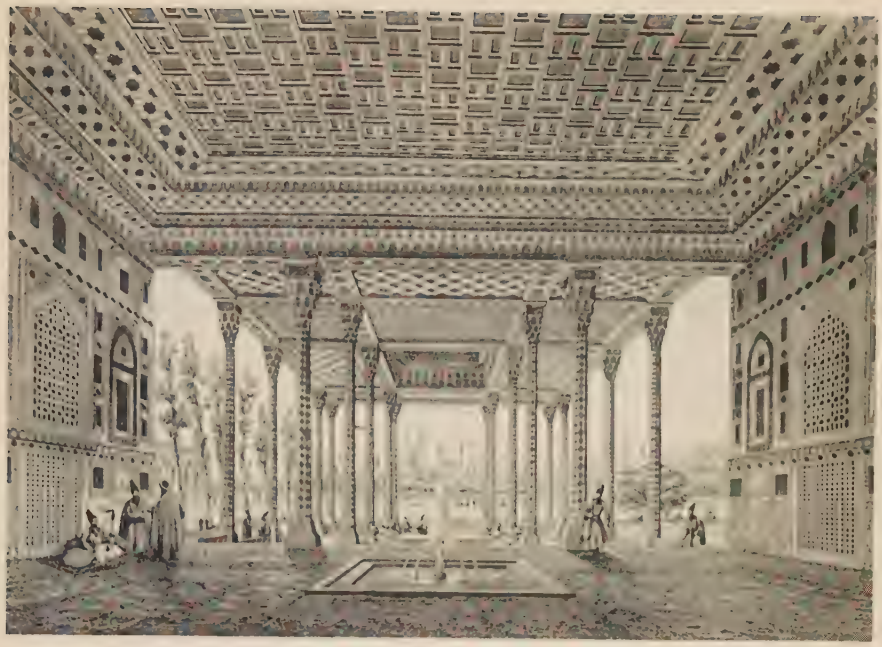
SULEIMANIYEH OR MOSQUE OF SULEIMAN

Follows Style of S. Sophia. Note the Surrounding Cloisters and Type of Minarets. P. 228

ARCADES OF THE MOSQUE, NOW CATHEDRAL, OF CORDOVA, SPAIN
NOTE EXTENSION OF COLUMNS TO SUPPORT UPPER ARCHES. PP. 221, 224

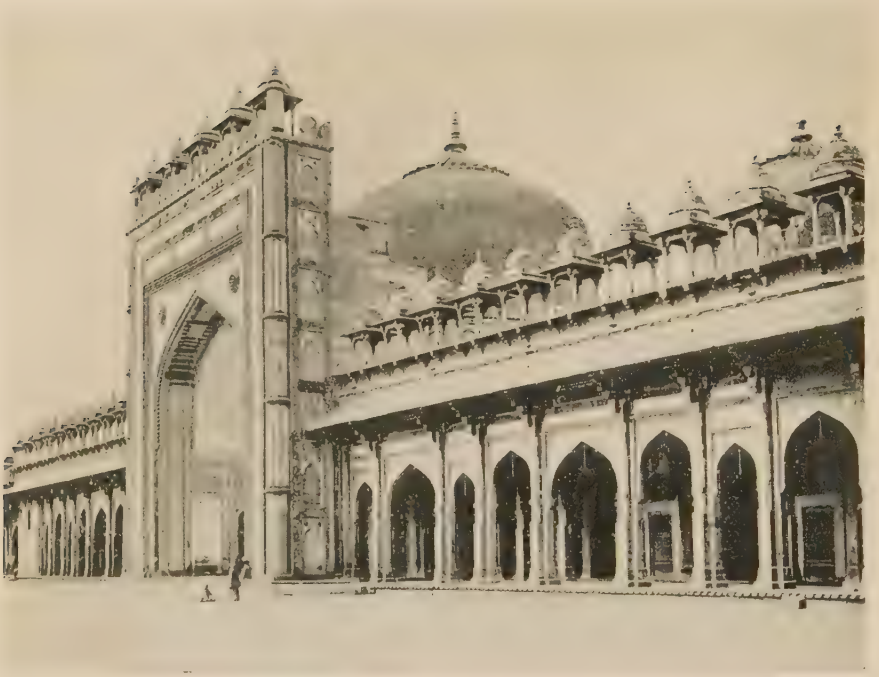


COURT OF THE LIONS, ALHAMBRA



CONJECTURED RESTORATION OF THE PAVILION OF MIRRORS, AND GARDENS
OF THE PALACE OF ISPAHAN

RESTORATION OF COLLEGE OF SHAH HUSSEIN: ISPAHAN
SHOWING ARCADED FRONT AND LOFTY CENTRAL GATEWAY; ALSO BULBOUS FORM OF DOME. P. 229



MOSQUE OF AKBUR, FUTTEHPORE-SIKRI

NOTE GATEWAY, ARCADES AND SERIES OF LITTLE DOMES. P. 230

TAJ MAHAL, AGRA

ERECTED BY SHAH JEHAN AS A TOMB FOR HIS WIFE. IN DISTANCE THE "PEARL MOSQUE," ANOTHER OF HIS MONUMENTS. P. 230

embellished with minarets. The chief sanctuary is the Kaaba, so called from its resemblance to a cube, of about 40 feet measurement, to the outside of which, on its south-east angle, is affixed the sacred Black Stone, the chief object of veneration. The shrine is surrounded to a depth of 20 yards by successions of colonnades with pointed arches.

Arcades.—These arcades, affording protection to the worshippers, are a feature common to all mosques; the direction of the arcades being usually at right angles, though occasionally parallel to, the wall of the mihrab —the niche which points toward Mecca. For columns the early Muhammedan builders relied upon what they found in the buildings which they replaced or remodelled; mixing the styles Egyptian, Roman, and Byzantine, and bringing their different sizes to conformity by setting blocks upon the capitals. To resist the thrust of the arches, wooden tie-beams were built into the masonry at the spring of the arches, and utilised for the hanging of lamps and lanterns. As these became a recognised feature of mosques, the beams were retained even after the skill of the builders had made them unnecessary as ties.

Domes.—The roofs are flat, constructed of timber, and on the inside coloured and gilded. A dome frequently crowns the *maksura* or prayer chamber, and the tomb of the saint, when the latter is included in the sacred precincts. Almost always the dome surmounts a square plan and to accommodate the latter to the circle the Muhammedan architects invented a method of construction that corresponds to the Byzantine pendentive. In principle it goes back to the ancient method of bridging over a space by setting the stones on each side of it in layers

that project over one another until the two sides meet at the top. The Muhammedan builders filled in the corners of the square with tiers of projecting brackets or corbels with niches between them. At first they placed corbel above corbel and niche above niche, but in time alternated them, so that the niches in one tier were astride of the corbels in the tier below them. This method of filling in the angles of the square, so as to bring the latter to a circle, came to be known as "stalactite" work and from being used as a constructive expedient was developed into a system of decoration that was frequently extended over the whole ceiling of the vault.

The exterior of the dome was seldom spherical, as in Byzantine architecture, but took the form of the *pointed,* or the *ogee,* or the *horseshoe* arch. It was built, either of brickwork in horizontal courses, covered inside and out with plaster; or, in later mosques, of horizontal layers of stone, engraved on the exterior with horizontal patterns. Windows were frequently ranged round the lower part. In some old tombs of the thirteenth century, as that of **Sheik Omar,** inside the East Gate of Bagdad, the dome is pineapple shaped.

The walls were built of local materials and decorated either with stone or brick in alternate courses, or with plaster, inset with precious stones or veneered with glazed tiles.

Minarets.—A distinctive feature of the mosque was the minaret, a lofty tower of lighthouse form, from the balcony of which the muezzin summoned the faithful to prayer. While the minarets show a general similarity of character, the details vary in different countries. Thus, in Persia they rise from a circular base and are crowned by a round cap; in Constantinople the base is

round, octagonal, or square and the top is finished with a cone; while in Cairo the top is flat. The shafts vary from circular to polygonal, and are usually divided into three tiers of balconies—though the Persian is generally distinguished by one—carried round the shaft and supported by corbels, which in some instance are embellished with stalactite ornament.

During the thirteenth, fourteenth, and fifteenth centuries the mosques became an aggregation of buildings, including the tomb of the founder, residences for priests, schools and hospitals. They correspond, in fact, to mediæval monasteries, and the evolution of their styles presents a certain parallel to the contemporary evolution of Gothic architecture.

Syria.—Among the existing mosques in Syria are those of **El-Aksah** on the Temple platform at Jerusalem and of **El-Walid** in Damascus, both of which are planned like a basilica. Also on the Temple platform is the **Dome of the Rock**, misnamed the **Mosque of Omar**, the central feature of which is a circular space, crowned by a dome, which was rebuilt by Saladin in 1189.

Egypt.—In Egypt one of the oldest is the **Mosque of Amru** in Cairo, in which the square open court is surrounded by arcades, set at right angles to the mihrab and supported by columns taken from Byzantine and Roman buildings. Somewhat similar in plan is the **Mosque of Tulun**, where, however, the arcades run parallel to the mihrab wall and the wide pointed arches are supported upon massive piers.

Then follow, during the period that corresponds to the development of Gothic architecture, the **Mosque of**

Kalaoom; that of **Sultan Hassan**, which is cruciform in plan; that of **Sultan Barbouk**, celebrated for its minarets and the beauty of the domé over the founder's tomb; and the small but richly decorated **Mosque of Kait-Bey.** In the prayer-chamber (maksura) of the last-named appears, besides the stalactite embellishment of the mihrab, a distinctive decoration of the arches. In one case the arches are composed of voussoirs alternating in colour; in the other the alternation is still further emphasised by the interlocking shapes into which the voussoirs are cut, so that they fit together with the variety and the exactness of a Chinese puzzle.

Spain.—Spain offers a very favourable opportunity for the study of Muhammedan architecture. The **Mosque of Cordova**, begun by the Caliph Abd-el-Rahman in 786, was enlarged by successive additions, until it presents the appearance of a forest of columns and arches, apparently of unlimited extent. There are said to be 860. The arcades are in two tiers, the upper arches being supported on posts which are placed on the capitals of the lower ones and at the same time form abutments to the lower arches. In most cases the arches are of horseshoe form; but elsewhere, as in the vestibule to the mihrab chamber the upper horseshoe arches surmount a tier of cinquefoil or five-scalloped ones, and the posts on which they abut are faced with attached columns. A remarkable additional feature is the interlacing between the upper and lower arches of portions of multifoil arches; so arranged that they appear to bridge over the space between the alternate lower column and at the same time to spring over the capitals of the intermedi-

ate upper column. The arrangement is a striking instance of the Arab invention in the use of repetition of motive, a use, in this case, governed by constructive reasonableness as well as imposed by the desire for subtlety of elaboration.

The **Mosque of Cordova** is second in size to the **Great Mosque of Mecca.** Though the superb adornments of mosaics and red and gold ceilings have suffered from decay and restoration and its vista of arcades is blocked in parts by the coro (choir), erected when the edifice was converted into a cathedral, it is still a marvellous memorial of Cordova's supremacy as the most learned, cultured, and prosperous caliphate in Islam.

In Toledo there is nothing approaching the magnificence of the Mosque of Cordova. Among the remains are the churches of **S. Cristo de la Luz** and **Santa Maria la Bianca,** which are mosques converted to the Catholic ritual.

At Seville beside the much renowned **Alcazar** or Castle, is the celebrated tower, **Giralda,** so named from the weather vane (giradillo), a figure of Faith with a banner, some 305 feet from the ground. It surmounts the Renaissance top of three stories, added in 1568 to the old tower, which, as an altarpiece in the cathedral shows, originally terminated in battlements. These suggest that the building was erected as a watch tower or, may be, as a symbol of power. Its plan is a square of 45 feet, the walls being about 8 feet thick, built of material from Roman and probably Visigothic remains. Its surface is pierced by twenty windows, many of which are subdivided by columnettes, and embellished with sunken panels, enriched with arabesques. The **Giralda** is under

the special protection of SS. Justa and Rufina—a fact commemorated in the above-mentioned picture and in another by Murillo, now in the Provincial Museum. It was used as a model for the design of the tower of the Madison Square Garden, New York.

The **Alhambra, Granada,** represents the best preserved as well as the most perfect example of the Moorish-Arabic genius. It was a fortress-palace, much of it built on the brink of the rock, the steep slopes of which were used to construct the lower stories of baths, offices, and guard-rooms. The exterior has no impressiveness, though the original grouping of walls and roofs must have been highly picturesque. Its halls, chambers, and remains of a mosque are clustered about two rectangular courts or patios, which are joined like the two parts of an "L"—the "Court of the Alberca" and the "Court of the Lions." From one of the ends of the Alberca Court projects the "Hall of the Ambassadors"; from the other the "Hall of the Tribunal," while the long sides of the Court of Lions open respectively into the "Hall of the Abencerrages" and the "Hall of the Two Sisters."

The "Court of the Lions" is so called from the fountain in its centre, an immense marble basin supported upon twelve lions, which form a remarkable exception to the Muhammedan rule against representing the image of any living thing. Both these Courts are arcaded, the columns, set singly or in pairs, or groups, exhibiting, as do all the columns in the Alhambra, distinctive features in their capitals, which are separated by a high necking from the shaft.

It is, however, in the interior of the halls that the decoration reaches its finest pitch and nowhere more than in the "Hall of the Two Sisters," which formed the cul-

minating feature of the harem quarters. The name is supposed to have been derived from two slabs of marble in the pavement but may well have been suggested by the window, which occupies a bay and is divided by a small column and two arches into two lights. The walls, above a high wainscot of lustred tiles, are encrusted with flat moulded arabesques, representing a delicate lace-like tracery of leafy vines and tendrils, still tinctured with the red, blue, and gold that formerly enriched them. The arabesques melt into the stalactite embellishments which completely cover the hollow of the dome; created, as it seems, by giant bees, whose cells hang down like grape-clusters in an endless profusion of exquisite intricacy. Time was when this unsurpassable delicacy of magnificence glowed with gold touched into a thousand-fold diversity of tones, by the light of hanging lamps.

As an expression of the Arabic genius in the direction of subtlety this represents finality. It embodies the culture of a race that in its learning as in its art had been devoted to the exaltation of details; and embodies also the latent instinct of a desert-wandering race whose eye had been little habituated to varieties of form, but saturated with colour and in the watches of the night had been long familiar with the mystery of vaulted sky, sown with star-clusters and hung with the jewelled lamps of planets. It was characteristic also of the Oriental fondness of abstraction that revels in subtleties and loves to merge itself in the contemplation of the infinite. It is the kind of decoration that being denied the reinforcement of nature was bound to evolve sterility.

Turkish.—When the Seljuk Turks, after occupying many parts of the Byzantine Empire, finally took Con-

stantinople, they converted **S. Sophia** into a mosque, and more or less closely followed its style in the mosques they themselves erected.

Thus the **Suleimaniyeh** or **Mosque of Suleiman** the Magnificent, repeats the central dome and the two apses of the Christian building, preserving also the flatness of the dome-form. It is approached by a fore-court, surrounded on all its sides by cloisters, roofed with a succession of smaller domes, and embellished at the angles with minarets. These have circular shafts terminating in sharply pointed cones. In the garden of the mosque are the octagonal, dome-crowned tombs of the founder and his favourite wife, Roxelana.

The **Ahmedizeh**, or **Mosque of Ahmed** is square in plan, with a central dome, flanked by four apses, the angles being filled in with four smaller domes. The interior is lined with coloured tiles, while that of the **Suleimaniyeh** is veneered with marble.

The public fountains are distinctive features of the city. In one near S. Sophia, for example, the water-basin, octagonal in shape and covered with a dome-like grille of ironwork, is enclosed in an octagon of arches that support a sloping roof which extends in wide eaves and is surmounted by a dome.

Persia.—In point of time Persia enters early into the Muhammedan conquest, but we have reserved the consideration of it until later, because she did not reach the height of her renewed splendour in the arts until the fifteenth and sixteenth centuries, and then contributed to the Muhammedan art of India.

When Muhammedanism extended to Persia, it came in touch with the decaying Sassanian empire that from

A. D. 226 to 641 had withstood the power of Rome and extended its sway nearly to the gates of India. The remains of its architecture consist chiefly of palaces such as those at **Serbistan, Firuzabad,** and **Ctesiphon.** In these, with an inventiveness of their own and on a great scale, the builders combined elements of Assyrian and Roman architecture—square, domed chambers, barrel-vaulted halls, and portals formed of huge arches, elliptical or horseshoe in shape.

The direct evidence of this style on the earliest Muhammedan buildings has disappeared owing to the devastation of the Mongol invasion under Genghis Khan; but the Sassanian influence is conjectured from the later architecture which grew up after A. D. 1200. Important examples are to be found in **Bagdad, Teheran,** and **Ispahan.** Among the memorials in the last named city is the **Great Mosque,** which has an open court, surrounded by two-storied arcades. Its special features include portal-arches, rising above the highest of the adjoining walls; vaulted aisles, *bulbous-shaped* domes, and minarets of peculiar elegance. The walls are decorated with enamelled tiles.

India.—Persian-Muhammedan architecture, probably because of the Sassanian influence, was superior to the Arabian-Muhammedan in constructive elements and represents more fully a developed style. Many of its elements reappear in Indian-Muhammedan architecture, which by the beginning of the fifteenth century was developing a style distinguished alike by the grandeur of the whole and the structural meaning of the details. The finest example of this early period is the **Jama Musjil** (Principal Mosque), at **Ahmedabad,** which Shah Ahmed

reconstructed out of a Hindu temple. The Hindu influence is still apparent in the massive detached pillars that buttress the chief entrance.

The style reached its full development of structural logic, dignity, and beauty under the Mogul dynasty (1526–1761). By this time the Muhammedan architects had developed a method of dome support, different both from the Byzantine and the Arabic pendentive, which combined corbels, ribs, vaulting surfaces, and corner *squinches.* The last named are arches placed diagonally at the angles to bring the square to an octagonal, which was the favourite form of plan adopted for tombs. Of these the most imposing is the **Tomb of Mahmud** at **Bijapur.**

A noble example of the earlier Mogul style is the **Mosque of Akbar** at **Futtehpore-Sikri.** Especially noteworthy are the southern and western gateways. They tower up with emphatic assertion and yet with a finely proportioned relation to the flanking arcades. This is due in a great measure to the arches of the arcades being repeated with more elaborate detail in the recess of the gateway, where also an upper tier of arches balances the architrave of the arcades. These tiers of arches, leading up to the semi-dome of the ceiling give a contrast of grace to the sterner lines of the exterior arch, and introduce gradations of refinement into its monumental scale.

The later example, **Taj Mahal, Agra,** erected by Shah Jehan (1627–1658) is distinguished by less force and a greater delicacy and refinement. Though it is said to have been designed by a French or Italian architect, it is regarded as the last word of beauty in Indian-Muhammedan architecture and one of the most beautiful architectural monuments in the world.

This royal tomb, used as a ceremonial hall during its founder's lifetime, stands upon a marble platform, 18 feet high and 313 feet square, at the corners of which spire up minarets of circular, that is to say, of Persian design. The building occupies a square plan of 181 feet, from which the corners have been removed; the façades being composed of two tiers of deeply recessed arches, interrupted by four monumental portals, which correspond, though with greater refinements of proportion and detail, to those of the Mosque of Futtehpore-Sikri. The central dome of bulb-form rises upon a lofty drum to a height of 80 feet with 58 feet diameter, and is balanced by four small domes, supported on columns. The material of the whole is white marble, enriched with carvings and inlays of jasper, bloodstone, and agate. The **Taj Mahal**, as exquisite as it is imposing, is set like an immense jewel in an enchanting scheme of garden-planning that includes terraces, lakes, fountains, and foliage.

CHAPTER V

EARLY MEDIÆVAL CIVILISATION

The period of architecture to which this chapter forms an introduction is from A. D. 1000 to 1200. It is usually known as the Romanesque period because the architecture in certain structural particulars represented a return to Roman methods. But the application of the principles varied in different parts of what had been the Roman Empire under the influence of local conditions; according as the locality was Northern Italy, or Northern or Southern France, or England, or the Rhine Provinces of Germany.

On the other hand, when we come to consider the social and political conditions, the word Romanesque is too narrow. It was, it is true, a period of gradual reconstruction of order upon the ruins of the Roman Empire and one of the forces that made for order was the partial revival by Charlemagne of Roman Law. The latter became a model by which the slow process of organising society anew could shape itself. So far, at least, the social tendency of the period was Romanesque. But after all, this was only a detail of the new order, and by no means the most significant.

Indeed the attempt to revive an empire was in itself reactionary and opposed to the spirit of the time. For the latter was groping toward the organising of independent nationalities. The millions who had overwhelmed the Roman Empire possessed a certain kinship of race and language; but they were divided into tribal

units which clung to their separate identities, the more so as the difference of localities in which they settled increased their separateness. Thus the movement of the time was a slow change from tribal to national unity, and the gradual construction of a social and political order, suited to their racial instinct of independent freedom. The advance was much more rapid in social than in political order. For centuries the independent and adventurous spirit of the various peoples was to keep them embroiled in constant warfare, postponing the settlement of national landmarks. Back of this political chaos, however, was a steady and sure growth in social order, which, indeed, was largely assisted by the necessity of self-preservation.

While popes, emperors, kings, dukes, and counts were fighting in colossal or petty rivalries, the "honest man," as the saying is, "came into his own." The merchants grew in importance, the craft-gilds consolidated their strength, and the cities became oases of comparative order. It was an age distinguished by the growth of "communes"; that is to say, of burgs, boroughs, and cities, possessing certain rights of self-government and immunity from indiscriminate taxation. Not that these privileges escaped infringement. The fight for them had to be perpetually maintained and the fortunes of the commune varied from time to time. Yet the seed of self-government was sown, to stay in the soil of every Teutonic nation.

The rise of the commune was partly due to the Feudal system, which had its origin in the "fee" or tenure in land. As the system came to be worked out, the tenant held in fief from an overlord, who in turn held from some more powerful overlord and so on up to the King. When

the latter went to war, the word was passed down and each overlord had to bring his quota of men, which he made up from the levies of the overlords below him. It thus became an automatic method of raising an army, of which the lowest knight with his few followers was the unit. On the other hand, the ease with which the method could be put in operation and the need of constant preparation for it, maintained a condition of warlike feeling, that in the absence of a great war broke out in jealousy and strife among the several constituent parts of the system.

It was to guard against the inevitable miseries of this constant turmoil that the merchants and artisans built their homes and shops around some burg or castle, to the lord of which they looked for protection, walls of defence being gradually built around the city, until it became fortified with the castle as a citadel. The benefits were mutual. Commerce and trade could be pursued in comparative peace, while the lord in return for his protection would receive a portion of the profits to finance his various expeditions or intrigues. To consolidate their influence the merchants formed themselves into merchant gilds, while the citizens established craft-gilds in the various trades.

Thus gradually both commerce and trade spun a network of peaceful activity and comparative stability over the otherwise troubled world, knitting together its remotest parts. For while the argricultural population was tied to the soil, and passed with its transfer from one owner to another, the condition of commerce and to some extent of trade was fluent. Merchants travelled and had their agents in distant countries; and even the artisan might move from place to place and enroll him-

self for the time being in the local gild of his craft. And the merchants became also the bankers of their time: those of Lombardy, for example, loaning money to kings as well as to other merchants; the memory of which is preserved in "Lombard Street," in London's financial centre.

These merchants had become wealthy by trading in the merchandise from the East and increased their wealth by distributing the merchandise throughout the West. Milan, therefore, speedily grew in importance because she commanded the roads leading over the passes of the Alps. Thence the chief stream of commerce led at first through Provence. Later, German cities like Augsburg and Nuremburg, became powerful and prosperous on the road to such northern ports as Lübeck and Hamburg, while the Rhine became the highway of commerce to Bruges, Ghent, and Brussels.

The gilds perpetuated what came to be called the "mystery" of their crafts by organisations which combined a system of apprenticeship with what we know to-day as a trade-union. One of these was the gild of masons from which Freemasonry derived. It included various grades from the ordinary worker of stone and marble, through the men skilled in carved work, up to the few who were capable of designing and supervising the construction. And although the tradition that these mason-gilds travelled from place to place has been discredited, it is still allowed that some of these master-masons or architects, as we call them to-day, must have acquired a fame which caused them to be engaged by other cities than their own.

Meanwhile, there was another great influence operating in the interests of social order—that of the Church.

Many bishops occupied positions corresponding to that of a feudal lord and some even went to war at the head of their troops. The cathedrals, like the castles, became the nuclei of cities. Moreover, the Religious Orders were increasing in numbers and in influence, both spiritual and temporal. There had been a widely held expectation that the end of the world was to come in 1000 B. C. After the fateful date had passed, people breathed more freely with a fresh zest of life and thankfulness to Heaven; and the Church generally and, in particular, the Religious Orders, put themselves at the head of this great revival. They became the leaders of a great popular religious and civic enthusiasm that found expression especially in church and cathedral building.

The earliest Order, the Benedictine, had been founded by S. Benedict in the sixth century and spread through the west of Europe, obtaining firm hold in England. The Cluniac Order, with its headquarters in the Abbey of Cluny in the Department of Saone et Loire, France, was established in 909 and in 1080 S. Bruno founded the Carthusian Order, whose chief monastery in France was the Grande Chartreuse, near Grenoble. A little later came the Cistercians, and the Augustinian Orders, while the twelfth century saw the founding of the Dominican Order of Preaching Friars and the following century the establishment of the mendicant order of Franciscans. Nor does this summary complete the list. The orders rivalled one another in the number and efficiency of their monasteries, which were the centres not only of religion but also of learning, art, and economic life, affording guest-houses for travellers and serving as hospitals, schools, and colleges.

The monastery was usually erected around a square

enclosure still called in England a "close," surrounded by cloisters. On one side of it adjoined the Church or Minster which, if it were cruciform, extended its transept along one side of the cloister, while the nave occupied another. Along the opposite side of the enclosure ran the refectory, or common feeding-room of the brotherhood, while the fourth side was occupied with dormitories. Grouped around this plan were the abbot's lodging, guestrooms, school, and dispensary, the bake-house and granaries, fishponds, gardens, and orchards. And in some quiet room where the light was favourable, certain of the brothers plied the task of scribes and illuminators. Happy the monastery that could boast a master-miniaturist or one who was of surpassing merit as a master-mason. Down to the thirteenth century "Architecture was practised largely by the clergy and regarded as a sacred science."

The influence of monkish architects may have had much to do with the change of the cathedral or church plan from basilica to cruciform, which is characteristic of this period. The clergy continued to be separated from the laity and the extra accommodation needed for the monks of a large monastery caused the apse to be replaced by a chancel, which was raised by several steps from the level of the nave. It contained the stalls for the monks and was divided from the nave by a screen (cancellus), which was surmounted by a gallery or loft, in which the rood (cross) stood.

This rood-loft could be utilised for sacred tableaux which were given for the edification of the people at certain festivals. At Christmas, for example, the choir-boys, playing the part of angels, would sing from it the chant of Peace and Good Will, while a representation

of the Manger and the Kneeling Shepherds was displayed upon the top of the chancel steps. For the Church recognised the power of drama to affect the imagination, and in time the tableaux developed into "Passion Plays" and "Mystery Plays." In fact the nave of the church or cathedral was treated as the meeting place for the laity and was used for a variety of secular purposes in connection with the life of the community, while the towers could be used, if necessary, for watch towers and for the safe storing of treasure.

Further among the circumstances that made a more ordered and more human condition of society was the code of chivalry, demanding of all knights or "fully armoured and mounted men," a high sense of honour, gallantry in battle and peace, and courtesy to women. Charlemagne had gathered round him twelve "paladins" or paragons of knightly virtue, and the fame of their example inspired to deeds not only of valour but of courtly grace. Thus, in Provence, Spain, and Northern Italy there flourished the graceful art of the Troubadour, which was paralleled in the Danube provinces by that of the Minnesingers. The troubadours, originally of noble birth, including princes in their ranks and one king, Richard the Lion-Hearted, invented and sang songs to music of their own composing, thus setting a model for the wandering troubadours and minstrels who later travelled professionally from castle to castle, not overlooking, we may be sure, audiences of people that might be gathered in the churches.

Chivalry was turned to shrewd account by the Church. It could not curb the instinct of fighting but could direct it and did so by enjoining upon knightly penitents a pilgrimage to the Holy Land. Such expeditions grew in

number and size, travelling armed for protection on the journey, and out of them came the Crusades for the recovery of the Holy Spots in Palestine from the Moslem. These were far from being unmixed blessings to the people, but at least they diverted for a time the turbulence and left the cities freer opportunity of growth. And many a noble on returning home, would build the church or chapel that he had vowed, determined, perhaps, that it should rival in beauty some example he had seen upon his wanderings.

In view even of the few particulars summarised above, how is it possible to relegate this period to "The Dark Ages" or even to dismiss it as negligible, summing it all up as part of the Middle Ages, between the fall of Rome and the revival of a knowledge of Classic learning and art in the fifteenth century? It is to the Italians of the Renaissance that we owe this distortion of history. Properly speaking there was no Renaissance or Rebirth; but at least from the time of Charlemagne onward a steady growth in civilisation, and how vigorous it was, notwithstanding the many setbacks, due to the continuing confusion, may be gathered from the architecture of the period.

It is well to bear in mind that after the death of Charlemagne his empire gradually fell apart. A German empire extended from the Rhine to the Danube and was in constant conflict with the Popes to exert its sway over Northern Italy; the growth of the communes or free cities being perpetually disturbed by siding with one or other of the contestants—the Imperial or Ghibelline and the Papal or Guelph.

France, meanwhile, was not yet a united nation. The kings of the House of Capet held only the so-called Ile

de France or Royal Demesne, extending from Paris to Orleans, and were surrounded on all sides by independent Duchies and Countships, with which they were constantly at war. The Duchy of Normandy had been established to the north by Rollo and in 1066 his descendant, William, conquered England.

These distinctions of territory help to explain the variations of the Romanesque architecture, as it grew up, respectively, in Northern Italy, the Rhine Provinces, Ile de France, Southern France, Normandy, and Norman England.

PISA CATHEDRAL, CAMPANILE AND BAPTISTRY

Pp. 244, 247

INTERIOR OF PISA CATHEDRAL

Showing a Glimpse of the Neck of the Dome Supported on Corner Arches, That Take the Place of Pendentives. P. 246

S. AMBROGIO, MILAN

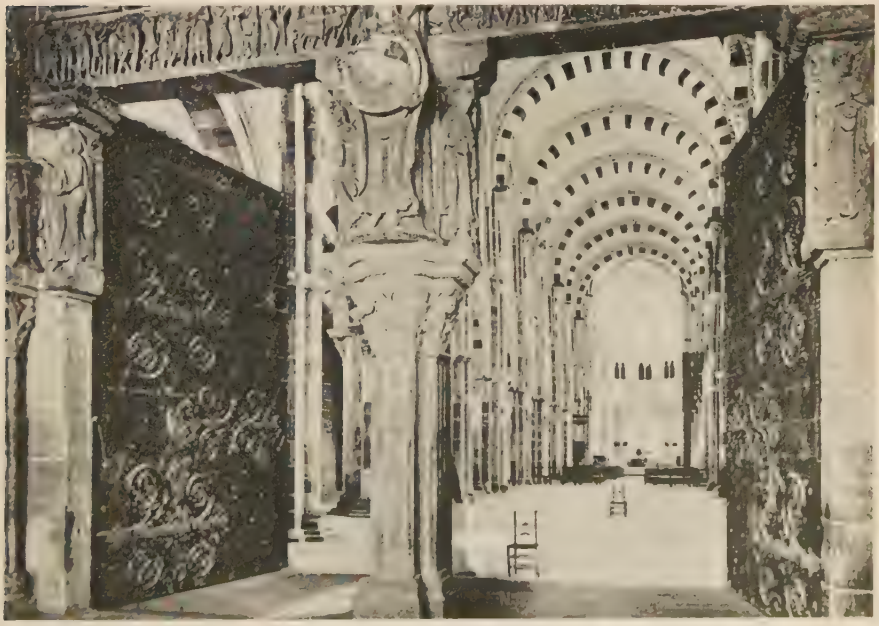
EARLY EXAMPLE OF RIB-VAULTING. P. 249

S. MICHELE, PAVIA

SHOWING RUDIMENTARY DIVISION OF WEST FRONT AND USE OF ARCADING. P. 251

THE CERTOSA, OR CHURCH OF THE CARTHUSIAN ORDER, PAVIA

Romanesque with Renaissance Lantern and West Façade. P. 313



CHURCH OF VÉZELAY, FRANCE

Early Example of Groin-Vaulting Replacing Barrel-Vaulting. P. 253

CHURCH OF ABBAYE-AUX-DAMES, CAEN

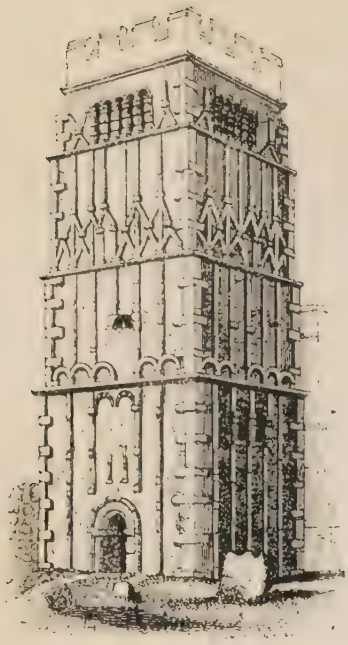
REMAINS OF THE CHURCH OF CLUNY ABBEY

DOORWAY OF SALAMANCA CATHEDRAL

SHOWING PART OF THE BEAUTIFUL DOME OVER THE CROSSING.

CHURCH OF THE APOSTLES, COLOGNE

NOTE THE ARCADING EMBELLISHMENTS AND GROUPING

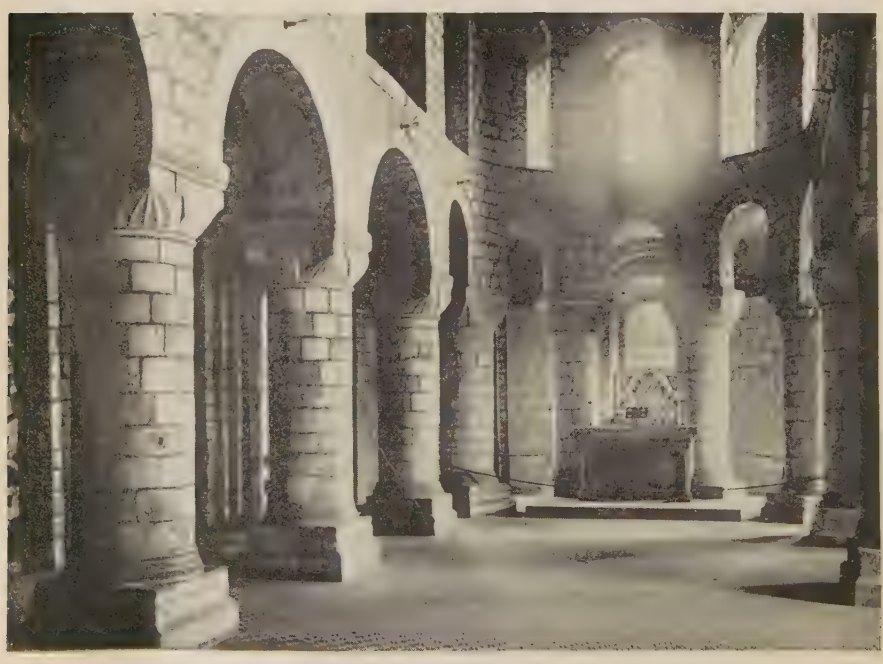


ANGLO-SAXON TOWER

EARL'S BARTON, NORTHAMPTONSHIRE. P. 255

IFFLEY CHURCH, NEAR OXFORD

P. 257



ST. JOHN'S CHAPEL, TOWER OF LONDON

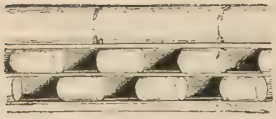
P. 255

NAVE OF DURHAM CATHEDRAL

Note the Girth of Piers and Chevron Ornament. Vaulting, Earliest Example in England, Completed 1133. P. 256

PETERBOROUGH CATHEDRAL

P. 256



Billet Moulding

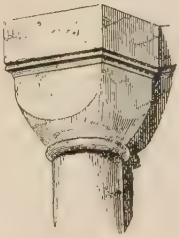
Chevron Moulding

Easton
Hampshire

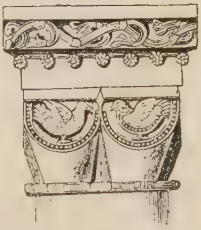
Ball-Flower Moulding

Tower Window. Bucknell, Oxon

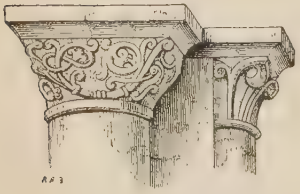
Late Norman. St. John's
Devizes



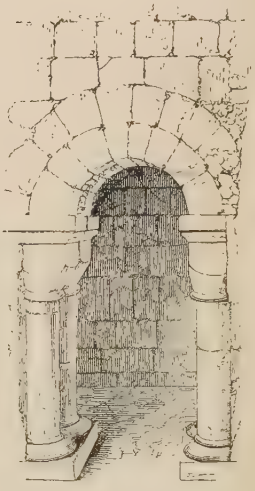
Cassington,
Oxon



Steetley
Derbyshire



Gloucester Cathedral



Early Norman Arch.
Westminster Hall

ENGLISH ROMANESQUE DETAIL

CHAPTER VI

EARLY MEDIÆVAL OR ROMANESQUE ARCHITECTURE

Romanesque is the term applied to the architectural style of the early Middle Ages which prevailed from 1000 to 1200. It manifests considerable variety, according to locality, but at the same time a distinct character common to all branches, in that it embodied a return to certain Roman principles of construction, modified more or less by early Christian and Byzantine methods. It represents a stage in the evolution of Gothic architecture.

In such localities as the North of Italy and Provence, where Roman remains were plentiful, the Romanesque architecture made free use of antique columns and details. But in the Rhine Provinces, the North of France, and England, the lack of such materials and of skilful workmen encouraged the substitution of the pier for the column and caused the latter to be of simpler and in many cases ruder design. Necessity, in fact, compelled the adoption of new forms. Moreover, the desire of the Church to build permanently led to the use of stone in place of inflammable timber, especially in the building of the roofs. Accordingly, the use of vaulting was revived.

It was out of the application of these necessities of construction that the Romanesque style was evolved.

Chevêt.—The basilica plan became gradually modified. The nave and aisles were retained, but the chancel, with or without an apse, was carried farther back and the length of the transepts prolonged, so that in

time the cruciform plan prevailed and acquired a symbolic significance. A special feature, gradually introduced, was the *chevêt* which formed an *ambulatory* around the sides of the choir and the semi-circle of the apse, and could be divided up into chapels dedicated to individual saints.

Vaulting.—In the earlier examples the nave was covered with a barrel-vault, the thrust of which was sustained in the first place by strengthening the nave walls by the omission of clerestory windows and, secondly, by the weight of barrel-vaults over the side aisles, their thrust, in turn, being sustained by thickening the outer walls and keeping the windows small. As a further reinforcement of the walls, projecting piers of masonry were built into them, which in time became features of the external decoration.

Gradually the barrel-vault was superseded by groin vaults; at first in the aisles and later over the nave as well. The groin vaulting over the aisles represented, as in Roman times, the intersection of two semicircular vaults. But since the nave was usually twice the width of the aisles, each of the nave bays would be oblong in plan. Accordingly two of these were included in one square bay, which took in two of the nave arches and corresponded to two aisle bays.

In some instances a shaft was carried up from the intervening pier on each side of the nave, supporting an intermediate transverse arch, so that the vaulting became sexpartite, or divided into six compartments. Whether the bay were six part or four part, the curve of all the groins—longitudinal, transverse, and diagonal—were semicircular. Accordingly, since the diagonals had a longer diameter, their curves rose above the others.

This variation was met by giving a concave or domelike surface to each of the compartments, so that the workmen were able to adjust the stones to the differences of the curves.

Rib-vaulting.—While this was possible in the actual operation of placing the stones, it would have needed exceedingly delicate calculation to build timber centering adjusted in advance to these domelike surfaces. Moreover, the ponderousness of the dome nave vaulting had made the use of timber centering extremely costly, even where timber was plentiful; while in districts sparsely supplied the cost had been prohibitive. Consequently, the ingenuity of the builders devised a system of construction that reduced the need of timber centering to a minimum. This was the system known as rib-vaulting. Briefly, it consisted in spanning the space—longitudinally, transversely, and diagonally—with preliminary arches of masonry, thus forming a skeleton frame composed of what are known as ribs. Each of these ribs, being comparatively light, could be constructed on a single moveable and expansible piece of centering, called a *cerce*. When the ribs had set, they offered sufficient support to hold up the doming of the compartments while it was being laid.

To some extent this method of construction had been anticipated by the Romans who in certain instances built preliminary transverse ribs to act as permanent centerings of the vault, in the masonry of which the ribs were buried from sight. The reintroduction of this device and its further development, as above described, originated with the Lombard architects. This has been definitely determined by the English architect, Arthur Kingsley Porter, who has proved that the adoption of the system

was prompted by the scarcity of wood in this locality. From Italy it spread to France, where it made its appearance in the Ile de France about 1100 or some 60 years after its adoption in Lombardy. It was at first employed purely as a necessary constructive expedient. Later its æsthetic possibilities came to be recognised, and the rib was developed by the Gothic architects into an element of great beauty, one of the characteristic features of the Gothic style.

Meanwhile, the use of vaulting by the Romanesque architects affected the character of the exterior. Mention has already been made of the masonry piers and the massive outside walls, pierced with small windows. For the further support of the vaulting-thrust towers were freely used. While in Italy the campanile was frequently detached from the main edifice, the towers in western and northern Romanesque churches became elements of prominence in the design. A pair frequently flanked the apse or four rose in the angles of the transepts and choir, while another pair, sometimes connected by a gallery, flanked the west end. A tower or dome might also surmount the *crossing* of the nave and transepts. The towers were square, polygonal, or circular, divided into stories which were pierced with windows or embellished with arcades. They were crowned, like the nave and aisles, with an exterior sloping roof.

Arcading.—The arcading, which now became a favourite method of embellishing walls, was of two kinds; either being *open* and permitting a passageway at the back of them, or with columns and arch mouldings attached to the wall, in the manner known as *blind arcading*. Another feature for strengthening as well as embellish-

ing the wall was the use of masonry piers, which, resting on a plinth, projected from the wall only as far as the width of the cornice.

The exteriors, in fact, were no longer, as in early Christian churches, plain and almost barn-like, but assumed a varied picturesqueness that, however, was distinguished by a fine structural unity.

The arch, whether used in interior or exterior arcading or for the tops of doors and windows, was round; usually semicircular but occasionally *stilted,* the ends of the semicircle, that is to say, being raised on perpendicular lines. The later introduction of the pointed arch, it may be added, marks the transition from Romanesque to Gothic.

A characteristic development of the Romanesque style is the treatment of the doors and windows. The jambs or sides were carried back in a series of angular recesses, which were filled with small columns, whose abaci frequently united in a continuous moulding. In many cases the angular recesses of the jambs were prolonged around the arch.

The shafts of columns were decorated with fluting, which might be perpendicular, spiral, or barred like trellis-work. The capitals, except when antique Corinthian or Ionic columns were utilised, display a variety of embellishments, sometimes influenced by Byzantine examples, at other times representing an original working out of foliage motives, often rude in treatment, but, especially in the German work, vigorously decorative.

In the nave arcading, that is to say the series of arches on each side of the nave, the supports consisted of square piers, to the faces of which columns were attached. From two of them sprang the arches; a third supported

the vaulting of the aisles, while a fourth was run up to a higher level to carry the vaulting of the nave.

Italian Romanesque.—Since the Romanesque style was coloured by the locality in which it appeared, it is necessary to study examples of it as they are found respectively in Italy, France, the Rhine Provinces, Spain, and England.

The Italian examples are conveniently subdivided into those of Northern, Central, and Southern Italy, or, more specifically, into the examples found in the districts north of the River Po, between the Po and the Tiber, and south of the latter. Of these the northern, to be considered later, are the most important, since they show, as we have noted, a more adventurous spirit in the matter of construction.

Central Italy.—On the other hand, the builders of Central and Southern Italy still followed the simple basilican plan and retained the wooden roofs and, in consequence, clerestory windows. They raised, however, in many cases the level of the choir and placed a crypt chamber beneath it; which sometimes, as in **S. Miniato, Florence**, is open to the nave. But their inventiveness was displayed rather in the details of decoration. Central Italy being rich in marbles, the use of this material for embellishing the exterior and the interior with bands and geometric designs was carried to such a perfection as virtually to constitute a style. The most beautiful example is that of **S. Miniato**, where, too, the open woodwork of the roof has been restored to its original colouring of gold, green, blue, and red.

Another notable example of this developed style of decoration is presented at **Pisa**, in the group of build-

ings comprising the **Cathedral, Campanile,** and **Baptistry.** Here the façades are embellished—one might almost say composed, for the embellishment is applied so constructionally—with tiers of blind arcades or of open arcades of red and white marble. Those of the Baptistry received in the fifteenth century additions of Gothic canopies and traceries, but the front of the Cathedral and the circular Campanile retain their original character. The Baptistry, also circular in plan, is crowned by an outer hemispherical dome, through which penetrates a conical dome, which in the interior is supported on four piers and eight columns. The influence of Byzantine workmen is seen here as well as in the dome which crowns the crossing of the Cathedral. The transepts of the latter are prolonged beyond the basilica plan and terminate in apses.

The Campanile, which comprises eight stories embellished with arcading, is known as "The Leaning Tower," since it inclines from the perpendicular about 13 feet in a height of 179, the greatest inclination being in the ground story, after which there is a slight recovery toward the perpendicular. It was begun in 1174 and completed in 1350. Vasari, the historian of Italian artists, writing some 200 years later, ascribes this lean to a settlement of the foundations. His explanation, though occasionally disputed, had been generally accepted, until the investigations of Professor William H. Goodyear, in 1910, established the fact that the inclination was intentional and provided for from the start of the work.

The tower is constructed of an exterior and an interior cylinder of masonry, the space between them being occupied by a spiral staircase. The steps of the

latter were individually measured by Professor Goodyear, who has set forth the results in a Bulletin of the Brooklyn Institute of Arts and Sciences (Jan. 21, 1911). Briefly, they show that the treads of the steps vary in height and that they incline sometimes toward the inner wall, sometimes toward the outer. In this way they tend to create a balance of strains on the whole structure, which is further secured by increasing the strength of the inner walls, where the inclination is inward. That the careful calculation involved in this was not due to an afterthought or the necessity of remedying the effects of a settlement is proved by the fact that the inclination begins at the lowest step.

Why then was this design adopted? Professor Goodyear furnishes the answer in two subsequent Bulletins. Reduced to briefest terms it is this: The Pisan Baptistry also has an inclination from the normal, both perpendicular and horizontal. Thus, in the south façade there is an inclination in the horizontal lines of 2 feet 2 inches toward the choir. Meanwhile, the vertical lines of the west façade are perpendicular to this slope and, consequently, the front inclines inward toward the nave. And these are only instances of a number of asymmetries that occur throughout the cathedral, all of which are proved to have been intentional in the original design.

Further, the asymmetries at Pisa bear a close analogy to the numberless asymmetries that appear in S. Mark's, Venice. The latter was built by Byzantine workmen, who therein followed the Oriental and the Hellenic dislike of formal mathematical regularity; and it is the Byzantine tradition again which in this respect, as in other details of decoration, domes and so forth, influenced the Romanesque group of buildings at Pisa. The order in

which they were erected is, the Cathedral, Baptistry, and Campanile; so that in the Leaning Tower the architects merely carried the principle of asymmetry to an extreme pitch.

The influence of Pisa is found in **S. Michele** and **S. Martino** in **Lucca**, and in the **Cathedral of Pistoia.**

South Italy.—The most important SOUTHERN examples are found in Sicily, which in the tenth century was overrun by the Saracens, who in the following century were routed by the Normans. Consequently, the Saracenic influence is mingled with the Byzantine in the **Cathedral of Monreale**, near **Palermo.** The plan is basilican, with apses at the eastern ends of the nave and aisles. The choir is raised. The arches of the nave are pointed but not recessed, and are supported on columns, with Byzantine capitals. The aisle walls have a dado of white marble, twelve feet high, inlaid with borders, composed of porphyry, while the arches and clerestory of the nave are embellished with mosaics of biblical subjects, framed in arabesque borders. Of a sombre richness of colour, they display the Byzantine characteristic of severity of design, and impart to the interior a solemn grandeur.

North Italy.—It is in NORTHERN Italy, particularly in the Lombard churches, that the constructional development is most marked. For, while the plan remained basilican, only occasionally showing well-defined transepts, the architects devoted their energies to the problem of vaulting. A notable instance is **San Ambrogio, Milan**, which is an early example of the use of ribs in vaulting. The original church, erected in the ninth cen-

tury, had wooden roofs; but in the rebuilding the nave was divided into four square bays, and immense piers were constructed to carry the diagonal, transverse, and longitudinal ribs.[1] Of corresponding massiveness are the transverse ribs, while to support the strain on the longitudinal ribs intermediate piers were introduced with an upper and a lower tier of double arches. These open into the two stories of the groin-vaulted aisles, which are given this treatment in order to act as buttresses to the thrust of the nave vaults. This compelled the omission of clerestory windows, thus adding to the sombreness of effect. Indeed the whole suggestion is one of ponderousness. It is the work of men experimenting with a new method of construction and intent for the present on achieving stability. The combination of the latter with dignity of height and the grace of lightness was yet to be developed in the Gothic treatment of the ribs.

The west end is approached by a narthex, opening into an arcaded atrium.

In the external decoration of the triple apse of the east end appears the rudimentary principle of the open arcade. The walls above the semi-dome and beneath the wooden exterior roof are crowned with a cornice, composed of arches supported upon corbels, the space between each being penetrated with a niche. This produces a series of deep shadows, in contrast with which the actual construction of the corbels assumes a lightness of effect. It was the preliminary step to the substitution of small detached columns for the corbels and the development of external arcading.

[1] The reader may be reminded that longitudinal is in the direction of the nave from west to east, transverse, across the nave, at right angles, while the "diagonals" span the bay obliquely.

The open arcading in its full development appears in the west façade of **S. Michele, Pavia,** where it serves its characteristic purpose of constructively lightening the effect of the cornice of the roof. In this instance, as in many of the Lombard façades, the nave and aisles are included in a single gable, their interior separation being marked upon the exterior by masonry piers. Into this façade also, as in the older part of the exterior of **San Ambrogio,** are set pieces of earlier sculptured ornament. These exhibit a strange mingling of grotesque animals with Scandinavian interlaces and Byzantine features—a notable fact, since they correspond with the sculptured ornament found on some of the Rhenish churches. This suggests that Lombard workmen were employed in Germany and that they brought back with them some of the German taste for symbolism in ornament.

In the west front of the **Cathedral at Piacenza,** we find the same use of single gable and masonry piers, but the cornice arcade is supplemented by two horizontal bands, that mark the division of the aisles into two stories. Moreover, each of the three entrances is embellished with a two storied porch, supported on columns that rest on recumbent lions. Over the nave porch the wall is penetrated by a characteristically Romanesque feature—a *rose* or *wheel* window. A comparison of this façade with the elaborate ones of Central Italy illustrates the preference of the Lombard architects for organic disposition of decoration rather than decoration for the sake of decoration.

An important feature of North Italy is the Campanile. Intended, it is supposed, as a symbol of power, it is usually detached from the church, and square in plan. The walls are simply treated, being reinforced often

with masonry piers, but interrupted with as few windows as possible, while the top is marked by one or two stories of arcaded windows and is crowned with a pyramidal or conical roof.

FRENCH ROMANESQUE

The map of France at the end of the tenth century shows the Royal Domain, the Ile de France, a dense forest with Orleans, the city of learning, at one end, and at the other, Paris, the city of the future—hemmed in on all sides by counties and duchies over which the Capetian King held little more than nominal suzerainty. For the purpose of architectural study these territories may be divided into north and south, on a line with the River Loire. Thus, to the north belong the Ile de France, Normandy, and Brittany; to the south, Provence, Aquitaine, Anjou, and Burgundy.

Everywhere the builders were intent upon the problem of vaulting; but were influenced in the south by local conditions. In Provence, for example, the seat of Roman civilisation, not only does classical influence appear in the details, but the vaulting is of the old Roman kind. **Notre Dame, Avignon,** is a well-known instance. And the barrel-vaulting was continued throughout the neighbouring Duchy of Aquitaine. Here, however, another influence intervened. The district had close commercial relations with Venice, Ravenna, and Byzantium, and it is reflected in the domical vaulting of many of the churches.

S. Front, Perigeux, for example, resembles S. Mark's, Venice, in having the plan of a Greek cross, surmounted by five pendentives. The arches, however, are *pointed;* of great depth, resting on piers, pierced with passages. In the **cathedral** of the neighbouring city, **Angoulême,** a

Latin cross is substituted for the Greek in plan. The aisleless nave is surmounted by three stone domes, roofed on the exterior. Over the crossing rises another dome, visible outside, which is raised upon a drum that is pierced with pointed windows, disposed in pairs. The southern transept is still crowned with a tower, its fellow to the north having been destroyed in 1568.

This building served as a model for the **Abbey of Fontevrault** in **Anjou.**

In Burgundy the most renowned of the numerous monastic establishments was the **Benedictine Abbey** of **Cluny.** Until the building of the present S. Peter's, its abbey church was the largest and most magnificent in Christendom. The plan was a basilica with double aisles, the east end terminating in a *chevêt* (shę-vay′) ; that is to say, an apse surrounded by a circular aisle, divided into chapels; in this case five in number. The nave was arcaded with pointed arches and spanned by an immense barrel vault. Groined vaulting, on the other hand, is supposed to have covered the aisles.

Groined vaulting takes the place of barrel-vaulting in the nave of the **Church of Vézelay,** and was also used in the ante-chapel, erected some thirty years later. But by this time the builders, in order to reduce the thrust, adopted a pointed section for the ribs—the first instance in France of the pointed groined vault, which was successfully developed later by the Gothic architects.

It is to be noted that the early vaulting, erected by the Clunisian architects, compelled the abandonment of the clerestory windows. The thrust of the great barrel vault of the nave was sustained either by high side aisles with either transverse or groined vaults over the bays, or by

barrel vaults over the aisles, which in turn were supported by the massive outer walls. For the use of the flying buttress had not yet been adopted.

Meanwhile, the northern climate demanded the additional light provided by a clerestory, and the architects of Normandy applied themselves to the problem. It was to be solved later in Gothic architecture by the use of pointed groin vaulting, but, pending this discovery, a method of vaulting was employed which is known as sexpartite. For the square bay was crossed in the centre by another transverse arch, which, when cut by the two diagonals, produced a plan of six parts. This, however, necessitated two narrow skew vaults, meeting in the centre, which was awkward in appearance. The method is illustrated in **S. Etienne**, the great church of the **Abbaye-aux-hommes** and **La Trinité** of the **Abbaye-aux-Dames**, both in **Caen.** These and other churches of Normandy such as the Abbey church of **Mont-St. Michel**, are characterised by an adventurous spirit as well as logic of design, marking a distinct progress toward the Gothic.

ENGLISH ROMANESQUE OR NORMAN

The audacity and resourcefulness of the Norman builders found extensive opportunity after the conquest of England. But few remains survive of Anglo-Saxon architecture, and they suggest that the buildings were of a rude kind. They were constructed of rubble work, reinforced with engaged piers and ashlar masonry at the corners, arranged in what is called "long and short" courses. The columns were short, stumpy cylinders crowned with one or two square blocks, and the details of doorways and windows were roughly hewn with an axe, though in the case of certain belfry windows, jambs of baluster shape,

seem to have been turned upon a lathe. The openings were either round-topped, suggesting a clumsy copy of the Roman style or else triangular, as if perpetuating a form of timber construction. The plan of the church appears to have been of the simplest, representing an oblong nave, separated by an arch from the smaller oblong of the chancel; the latter being lower than the nave and, on the inside, approached by two or three descending steps. The arrangement seems to have been derived from the example of the Celtic churches, as also was the habit of erecting towers, which, however, are not circular as in Ireland, but square without buttresses. One example of such a tower exists at **Earl's Barton, Northamptonshire,** in which occur balustered windows.

The Normans, therefore, had a free field for their architectural enterprise and, while they immediately commenced the erection of castles to overawe the country, they also erected monasteries and cathedrals, designed to surpass in size and magnificence the ones in Normandy. While following the latter in a general way, the English examples were characterised, on the one hand, by a more massive and picturesque treatment, and, on the other, owing probably to the scarcity of skilled labour, by simpler and less refined details.

The capitals of columns, for instance, were usually of the cubic-cushion form, as may be seen in **S. John's Chapel** in the **Tower of London.** The piers were often round and frequently clustered with columns, the round arches being recessed and framed with round mouldings. The latter, in the case of doorways and windows, were enriched with ornament carved in zig-zag, chevrons, billets, and beaked heads. The plan was apt to be longer than that of the French churches, and the elevations were

proportionately lower. Vaulting was, for the present, confined to smaller churches and the side aisles of the larger; but the nave walls of the cathedrals were built sufficiently massive to support the vaulting which in some cases was subsequently added. The clerestory windows were set toward the outer part of the wall, the remaining space being occupied by a passageway, which, in front of the windows was screened from the nave by three arches.

While the Norman style, as the English-Romanesque is usually called in England, appears in many cathedrals, the character of it has been greatly modified by later additions. But the finest example still existing is that of **Durham**; next to which come **Peterborough** and portions of **Norwich**. The tower above the crossing, which became a distinction of English cathedrals and is so imposing a feature of **Durham**, was added much later. But the original nave (1096) is a remarkable example of massive Norman construction, the round piers having a diameter nearly equal to the span of the arches and being channelled with flutings and spirals. The vaulting was completed in 1133 and is said to be the earliest example of Norman vaulting in England. Another notable feature of Durham Cathedral is the so-called Galilee chapel, which, in imitation of the ante-chapel in Caen, takes the place of a porch at the west end. It was used by penitents.

At **Peterborough** the nave, only second to Durham as an example of Norman at its finest, is still covered with the original wooden ceiling, divided into lozenge shapes and painted. It is believed to be the oldest wooden roof in England. The Norman parts of **Norwich Cathedral** are the long, narrow, aisleless nave, the transepts, and

the choir with its chevêt of chapels. **Ely**, again, has Norman nave and transepts; **Bristol**, a Norman chapter house; **Oxford**, nave and choir; **Southwell**, Norman nave, transepts, and towers; **Winchester**, transepts and towers; while **Worcester** has a Norman crypt, transepts, and circular chapter house. The last named is the only one of this design in England. Original Norman work is also to be found in the transepts at **Canterbury**, while the narrowness of its choir is due to the preservation of two Norman chapels.

In England the interior wall spaces and vaulting were decorated with paintings, for in this branch of decorative work the Normans found no scarcity of skill, since the Anglo-Saxon school of miniaturists, originally started by Celtic missionaries, had attained a high degree of proficiency, and now developed the principles of missal-painting into the larger and freer scope of mural decoration.

A good example of the small Norman church is that of **Iffley**, near Oxford. Especially interesting is the west front. In the larger examples this feature underwent change with the introduction of the pointed arch; but here is a distribution of the gabled end into three well defined and excellently proportioned stories, pierced, respectively, with a doorway, circular window, and an arcade of three windows. All are deeply recessed and enriched with characteristic moulding, and the effect, while a trifle barbaric, is vigorously decorative.

RHENISH ROMANESQUE

In the Rhenish Provinces is found the most fully developed Romanesque style, characterised by the fewest local differences. When, during the years 768–814,

Charlemagne built his royal tomb-church, which with subsequent Gothic additions is now the **Cathedral** of **Aix-le-Chapelle**, he adopted the plan of S. Vitale in Ravenna and imported classic columns. Moreover, the Rhine Provinces possessed many remains of Roman architecture. Later they became closely allied by commerce with Northern Italy and seem to have employed the services of Lombard architects.

All these circumstances tended to make Rhenish Romanesque resemble that of Northern Italy. On the other hand, it developed a style more constructively adventurous, vigorous, and picturesque; while at the same time it was on the whole more systematically organised than the French. It was, however, about fifty years behind the latter in its development which began late and continued longer.

A typical example of the earlier period of Rhenish Romanesque is the **Cathedral at Worms** (1110–1200). Its design shows features that are characteristically Rhenish: an apse at both the west and east end, flanked in each case by two towers; the use of transepts at the west end as well as the east (the eastern ones being here omitted), the erection of octagonal lanterns over both crossings, and entrances on the north and south sides instead of the west.

The exterior exhibits a well-defined orderliness and picturesqueness. The walls are reinforced with projecting piers and pierced with deeply recessed, round-arch windows. Noticeable also is the effective use of corbel arcades beneath the gable ends of the roofs and in various string courses, while the richer emphasis of open arcades is applied with equal discretion and effectiveness. Another noteworthy feature in the towers is the use of dor-

mers to embellish the conical or octagonal roof, which in effect are rudimentary spires.

Other early representative cathedrals are those of **Spires, Treves,** and **Mayence** while to the later period belongs the **Church of the Apostles, Cologne** (1220–1250). It offers a varied application of the same features in a singularly perfect design. The transepts and choir present a cluster of three apses round a low, octagonal lantern. The nave is short, twice the width of the side aisles and has western transepts and a square western tower. Especially fine are the exterior embellishments of the apses, consisting of two stories of blind arcading, surmounted by open arcades beneath the roof, while a corresponding sense of proportional dignity characterises the grouping of the eastern towers and lantern and the solitary distinction of the western tower. Here, as in three other examples of triapsal churches in **Cologne** —**S. Maria-in-Capitol, S. Martin,** and **S. Cunibert**—the domical vaulting is supported by squinches or pendentives.

The earliest example of nave vaulting is found in the **Cathedral of Mayence,** closely followed in the Cathedrals of **Spires** and **Worms** and the abbey church at **Laach.**

SPANISH ROMANESQUE

In Spain great impetus was given to cathedral building by the recapture of Toledo from the Moors in 1085. In architecture, as in painting, the Spaniards seem to have sought their artistic impulses from abroad, since the most important example of their early Romanesque style —the Cathedral of **Santiago de Compostello**—is a modified copy of **S. Sernin,** at **Toulouse, Aquitaine.** The plan is a Latin cross with aisles not only flanking the nave but

also carried round the transepts and choir apse in the manner of the French chevêt. The aisles are groin-vaulted, while a lofty barrel vault covers the nave, and an octagonal lantern crowns the crossing.

A special feature of Spanish Romanesque, also derived apparently from Aquitaine, is the beauty of the dome, which covers the crossing, as in the old **Cathedral of Salamanca**, the **Collegiate Church** at **Toro** and the **Cathedral of Zamora.** They are circular in the interior and octagonal on the outside with large turrets in the angles of the octagon. The interior dome is carried upon pointed arches, between which and the spring of the vault, in the case of Salamanca, are two tiers of arcaded windows. For the admission of light the arrangement is excellent, while the general character of these domes, covered on the outside with a low, steeple-like roof of stone, is admirably monumental.

Another characteristic Spanish feature, met with in some churches, as for example, that of **San Millan, Sagovia,** is an open cloister, on the outside of the aisle, from which doors open into it.

Carved ornament was rather sparingly applied, and except in minute details suggests no Moorish influence.

BOOK V

GOTHIC PERIOD

CHAPTER I

LATE MEDIÆVAL CIVILISATION

The change in architectural style, known as the Gothic, which began in the twelfth century and reached its full development in the thirteenth, represents so wonderful an expression not only of constructive genius but also of spiritual aspiration that one would fain peer through the mist of the past to discover the kind of civilisation that produced it. The general conditions that shaped the civilisation we have already noticed in the chapter on Early Mediæval Civilisation. There we recognised the threefold influences of the power of the Church, the extension and growing importance of Commerce, and the results of the various Crusades. And these still continued to be the motive forces of the later and fuller civilisation.

Prominent among the causes of the confused conditions in Western Europe was the multiplicity of rival authorities; which it had been Charlemagne's dream to subordinate to a centralised authority, emulating that of the Roman Empire. But, while his attempt at temporal domination failed, the more spiritual dominion exercised by the Church proved to be a unifying agency. Through the influence which she exerted over conscience and consequently over the actions of men through the Sacraments of Confession and Penitence, she was able in considerable measure to curb the license of feudalism. Furthermore, by allying herself with the growing power of the burgher classes in cities and standing as the champion of the de-

fencelessness of the lower classes in cities and country, she became the great adjuster of the fearful social inequalities of the period.

Her policy was one of checks and counter-checks. She could not subdue the forces that made for disorder; but could and did restrain them. Thus her support of the burghers built up a new force in the community that, through trade and commerce, made for stability and set up the constructive arts of peace as a make-weight against the destructive conditions that the internecine strife of the nobility engendered. And these last she further checked by utilising the enthusiasm for Crusades, which had been first stirred by the missionary zeal of Peter the Hermit in 1096. This first expedition, under Godfrey de Bouillon, resulted in the capture of Jerusalem from the Arabs and the establishment of a Christian Kingdom in Palestine. The six other Crusades, terminating with the second expedition of Louis IX (St. Louis) of France in 1270, failed to recover Jerusalem which had been recaptured by the Arabs. But in the course of them a Latin kingdom had been established in Constantinople under Count Baldwin of Flanders and a kingdom also had been formed in Cyprus. It is unnecessary to attempt to follow these various expeditions in detail, the more so that they represented only incidents in what had become a perpetual progression of movement toward the East. It is the effect of this that really concerns us here.

The effect may be studied in relation to the spirit that was stimulated, and to the economic and educational influence involved. The Church originally favoured the Crusades as a means both of diverting the savagery of the fighting class from internecine strife to distant warfare and of intensifying religious faith and feeling.

While it was not strong enough to crush the fighting spirit, it could consecrate it to some kind of an ideal, and thereby succeeded in tempering the stupid savagery of feudalism with the finer spirit of chivalry. An idealism of knighthood was encouraged that reverenced women, protected the weak, redressed the wrongs of the oppressed, and wedded to the courtesies of life a fervour of religious faith. Amidst the ugliness of the times there sprang up the blue flower of an ideal of beauty that affected in some measure both the spiritual and the social life. How real and intense was the spirituality of the times may be gathered from its excesses, as evidenced in the cruelties of the Crusade against the Albigenses for their heresies, and in the pathetic tragedies of the Children's Crusades. In 1212 a French shepherd boy, named Stephen, induced thousands of boys to follow him to Marseilles, promising to lead them dry-shod through the sea to Palestine, and a boy of Cologne, named Nicolas, led an army of twenty thousand children toward Italy. Such of the French children as reached Marseilles were kidnapped and sold to slavery in Egypt, while the German host perished from privations, leaving only a memory that is preserved in the legend of the Pied Piper of Hamelin.

In the wake of military expeditions to the East there followed the adventurers of commerce. Trade routes were opened up, the earliest of which and for a long time the most important was by way of Venice, over the Brunner Pass and up the Rhine to Bruges. And commercial relations meant the continual passing backward and forward of persons in the pursuits of peace and, in consequence, a growing intercourse between the members of different nationalities. The old isolation of the west-

ern and northern nations was gradually removed, and the individual's narrow horizon became broadened by travel, his restricted ideas of life enlarged and enlightened by contact with the alien and superior culture of the East. For it was in Constantinople and among the Arabs in Asia Minor, Syria, and Egypt that secular learning at this period flourished.

Accordingly, as a result of the Crusades, Western Europe indulged a taste for foreign travel, which stimulated a prodigious adventurousness that operated in the things of the spirit and the intellect as well as in the material conduct of life. Geography, for example, began to arouse a practical interest. It changed the attitude of men's minds to the outside world, opening up new paths of travel by land and sea and, equally, new conceptions of the possibilities of the world and of life. The interest also in Crusades aroused the desire to record them and an impetus was given to historical writings, which, partaking largely of romance, led to a renewed interest in such old romances as those of the Knights of the Round Table of the Arthurian Legend and of Charlemagne's Paladins.

A most significant testimony to the character of the civilisation of the thirteenth century is afforded by the voluminous writings of Vincent of Beauvais, who held the post of "reader" in the monastery of Royaumont, on the Oise near Paris, which was founded by Louis IX. His work, written in Latin and entitled the "Speculum Universale" or "Universal Mirror," is an encyclopædia of the knowledge of the Middle Ages; a mirror, in fact, of the mind of the age of great cathedral building. It is divided into three parts: the *Speculum,* respectively, *Naturale, Doctrinale,* and *Historiale;* to which a *Speculum Morale*

was added by another hand, being mainly a compilation from the works of Thomas Aquinas and other contemporary writers.

The "Speculum Naturale" has been described as a gigantic commentary on the first chapter of Genesis. It opens with an account of the Trinity, and of the attributes and orders of angels; proceeds to discuss our own world, light, colour, the four elements, and Lucifer and his fallen angels. Then it proceeds to the phenomena of time, the motions of the heavenly bodies, and the wonders of the sky in thunder, dew, rain, and so forth. Thence it treats of dry land, seas, and rivers, agricultural operations, precious stones, plants, fruits, not omitting their use in medicine. Other chapters discuss birds, fishes; another domesticated and wild animals, serpents, bees, and insects, the seasons, and the calendar. Then man is dealt with, his anatomy, his organs, and five senses, and the phenomena of sleep, dreams, ecstasy, memory, reason, and so forth.

The "Speculum Doctrinale," intended as a practical manual of knowledge, covers the subjects of grammar, logic, rhetoric, including a Latin vocabulary of some six thousand words; discusses the virtues and gives, under the head of "economic art," directions for building, gardening, and agriculture, while under the head of "mechanical art," it describes the work of weavers, smiths, armourers, merchants, hunters, sailors, and generals. Then, after prescribing rules for the preservation of health, it proceeds to mathematics, under which it includes music, geometry, astronomy, astrology, and weights and measures. And here it is noteworthy that the author displays an acquaintance with the Arabic numerals.

The "Speculum Historiale" begins with the creation of the world and continues a sacred and secular narrative down to the conversion of Constantine to Christianity. The "origines" of Britain are discussed and the story carried on to Mahomet and Charlemagne, after which comes a history of the First Crusade, a dissertation on the Tartars, and, finally, a short narrative of the earlier Crusade of St. Louis. One chapter is devoted to miracles. The history is largely composed of quotations from a variety of available sources, sacred and secular, which include Greek, Hebrew, and Arabic writers—known to the author through popular Latin versions—Eusebius, Seneca, Cicero, Ovid, Julius Cæsar, the Early Fathers of the Church, and the Mediæval writers, Sigebert de Gembloux, a Belgian Chronicler (1030–1112), and William of Malmesbury (1095–1142). The last named, an English monk of the Abbey of Malmesbury, wrote "De Gestibus Regum Anglorum," a history of the English Kings, and a continuation, entitled "Historia Novella," bringing the story down to 1142—works which have formed the basis of subsequent histories of England.

Mirrored in this compendium is the mind of the Middle Ages, that realised its dreams and needs in the most imaginative, daring, and grandly constructive type of building that the world had ever seen—that of Gothic Architecture. It was a mind at once practical and transcendental; grappling alike with the actualities of life and with the mysteries of the universe; hungry for knowledge, uncritical in appetite, accepting the miraculous as simply as it accepted the wonder of the world that was opening out to its eager vision with an immensity of promise. It was the mind of a giant youth, still exulting in the glow of growth; audacious in courage, of vaulting

imagination, with thews and sinews that achieve prodigiously. In the pursuit of abstract knowledge the age was prone to expend itself on subtleties, to entangle itself in sophistries, to lose itself in merest speculation. But when it grappled with the problems of building, this weakness was transformed into strength. Then it displayed a faculty of reasoning, apt, direct, and original, and a readiness in the practical application of mathematical principles. Of these, however, it was not bent on giving a scientific demonstration; it was satisfied to employ them in the pursuit of beauty. And its feeling for beauty, as we shall see later, was of extraordinary subtlety, expended upon relieving the structure of formality and imparting to it the variety and elasticity of a living growth.

Nor was it only in this indirect way that the "Speculum Universale" was reflected in Gothic architecture. Its chapters were represented in sculptured illustrations upon the exteriors of the cathedrals, particularly around the portals, in order that all who came and went might see and learn. The statues and reliefs at Chartres comprise some two thousand figures, while Amiens presents another memorable example.

Thus the Gothic Cathedral was not only the House of God; it was also the House of Man—the civic centre of his religious, social, moral, and intellectual life.

CHAPTER II

GOTHIC ARCHITECTURE

I

The term Gothic, with the suggestion of "barbarian," was applied by men of the Renaissance to Mediæval Art. Unlike the term Romanesque, it is not a name that defines. Hence an attempt has been made to substitute the word, *ogival,* from the French ogive, which is applied to the curve of the pointed arch—a distinguishing feature of the Gothic style. But in our own language, at least, Gothic has become so embedded that it is more convenient to preserve it.

We understand by it that style which was developed out of Romanesque about 1150 and continued to flourish until the development and spread of the Renaissance style.

The change which is represented in Gothic is due to several causes: (a) development of vaulting ribs; (b) the general use of the pointed arch; (c) reapplication of the Roman principle of concentration of vaulting strains upon four points; (d) the development of a buttress system to reinforce the main parts of the strain, and (e) the development of window openings both as to their size and ornamentation.

Periods of Gothic.—The period of Gothic covers the thirteenth, fourteenth, and fifteenth centuries. The variations which it presented in these several centuries are often characterised by the changes in the treatment of the windows. Thus, in France, they have been divided

supported by columns and arches, while the external wall was decorated with pilasters. Traces of these are still apparent; otherwise the outer aisle has disappeared and the present exterior represents the walling up of the spaces between the columns. This was done by Nicholas V in the fifteenth century, by which time the edifice, once richly decorated with marble veneers and mosaics, had fallen into decay. Its lateral walls are now covered with horribly naturalistic scenes of martyrdom, executed at the end of the seventeenth century.

Syrian Examples.—Syria has disclosed to explorers—of whom the late Marquis of Vogüé and Dr. H. C. Butler of the American Archæological Expedition have been the foremost—a number of interesting monuments, both civic and religious, erected between the third and eighth centuries. While details of moulding and ornament appear to have been copied from those of Roman remains, the methods of construction were worked out by the builders themselves. They seem to have retained the Phœnician preference for using the largest stones that could be quarried, transported, and put in place. Thus, arches were frequently carved out of a single stone, and when voussoirs were used, they were either few in number or, if numerous, of great height and depth. Large slabs of stone were also employed for roofing, especially in houses. In imitating antique details the architects appear to have had little if any feeling for their constructional origin or meaning; the capital and half the shaft of a column, for example, being carved out of one piece of stone, while the remainder of the shaft and the base were cut out of another. On the other hand, they developed for themselves certain fine features of construction, as for instance, in

the arcading of their basilican churches, in which the columns were sometimes replaced by large rectangular piers, carrying arches of great width. An example of this impressive method is found in the interior of the **Church of Kalb-Lauzeh.** This corresponds with the larger **Church of Turmanin,** the western façade of which shows a very independent spirit of design. It has a broad arched entrance, flanked by two square towers, connected over the doorway by an open gallery, constructed with columns.

A corresponding inventiveness marked their use of the basilican plan. A fine example is the large **Church of S. Simeon Stylites** at **Kalat-Seman.** The nucleus of the plan is an octagonal court, open to the sky, in the centre of which stood the pillar on which the saint spent thirty years of his life. This court forms the intersection or crossing of four rectangular wings, arranged in shape of a cross, each one of which has a basilican form, the nave and aisles of the eastern one terminating in apses.

Another very interesting plan occurs in the **Cathedral at Borah.** It presents a circle inscribed in a square, in the angles of which are apsidal recesses projecting from the circle. Moreover, from the east side of the square project three short rectangles, terminating in apses, which suggest the prolongation of the nave and aisles that have been interrupted by the circle. Nothing but the foundations of this church remain. Meanwhile, the **Church of S. George** at **Esrah** shows a similar plan and is surmounted by a high elliptical dome. It is conjectured that these two churches were the prototypes of **S. Sergius, Constantinople,** and **S. Vitale** at **Ravenna,** which will be discussed later, and of many corresponding churches of Byzantine architecture.

Ravenna.—In the development of early Christian architecture a very interesting part was played by Ravenna. For this city, situated on the Adriatic (though the sea has since receded to a distance of six miles), was the chief port by which the trade of Constantinople or Byzantium entered Italy. Accordingly some of the tombs and churches present a fusion of Byzantine and Syrian influences with Roman. The change from the basilican type is especially marked in the character of the plan and by the adoption of domes.

Thus the **Baptistry of Ravenna** is an octagonal structure, surmounted by a dome of hollow tiles. The **Tomb of Galla Placidia** is cruciform in plan with a lantern raised over the crossing or intersection of the arms of the cross. The lantern is pierced with four windows and surmounted by a dome, supported on pendentives—a method of construction, peculiarly Byzantine, which will be considered presently.

When Theodoric the Great, King of the Ostro-Goths and ruler of Northern Italy, selected Ravenna as his capital, he built the **Church of S. Apollinare Nuovo**, importing twenty-four marble columns from Constantinople and employing Byzantine artists and artisans. The plan is basilican, though the atrium and apse have been removed by subsequent alterations, but the interior is richly embellished with Byzantine mosaics. The latter also adorn the larger basilican **Church of S. Apollinare-in-Classe**, so called from its being situated near the port. Its columns also are distinguished by the peculiarly Byzantine feature of the *impost block*, to be described later.

After the death of Theodoric in 536 the Emperor Justinian, having through his general, Belisarius, routed the Goths from the country, made Ravenna the political capi-

tal of Italy, under the authority of an exarch. Then was built, probably as Court Church, the famous example of Byzantine influence, the **Church of S. Vitale.** We will return to this after a consideration of what is involved in the Byzantine style.

Byzantine.—The term Byzantine is applied to the style of architecture gradually developed in Byzantium after Constantine, in A. D. 324, transferred the capital of the Roman Empire to that city. Its distinctive features are the use of brick and stone in place of concrete; the use of imposts in connection with columns and arches; the character of the carved ornament applied to surfaces and, most important of all, a system of covering rectangular spaces with domes. It reached its highest point of development under the Emperor Justinian, between the years 527 and 565.

The style was the result of evolution; a product of the combination of principles of construction derived from Roman, Early Christian and Syrian architecture, and from the traditional methods of the Iran builders of Assyria; affected in matters of decoration by the luxurious taste of the Orient.

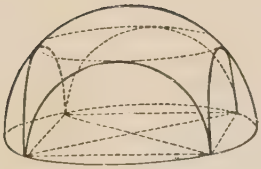
The favourite material of Byzantine builders was brickwork; the bricks being one and one-half inches in thickness, like the Roman, and laid between layers of mortar of similar thickness. In the case of cornices the bricks were moulded to the required contours and when used for the shafts of columns were circular in outline. The mortar was composed of sand, lime, and crushed pottery, tiles, or bricks. Except in the case of marble columns which were cut and put in place by masons, the whole of the preliminary work was done by bricklayers who constructed the entire "carcass" of the building. When this

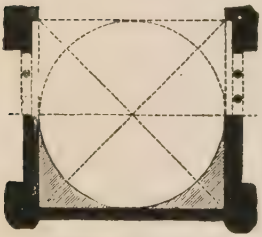
FROM THE INTERIOR OF SAN VITALE, RAVENNA

SHOWING THE "IMPOST" ABOVE COLUMN, AND DECORATION.
PD. 202-204, 207

TOMB OF GALLA PLACIDIA, RAVENNA

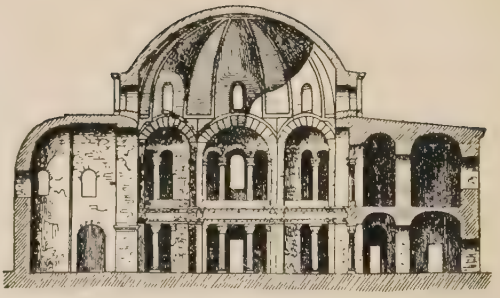
P. 201





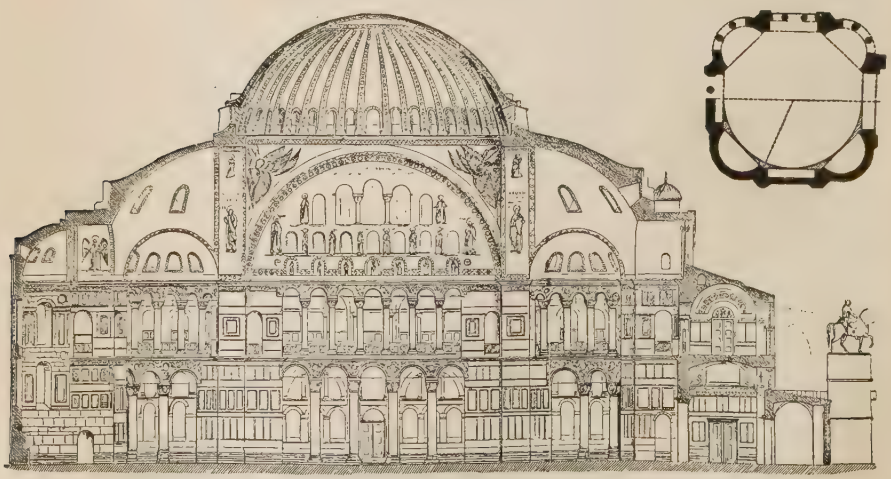
DIAGRAM

Showing How the Pendentives, Resting on Four Angles of a Square, Provide a Circular Base for the Dome. P. 205



SECTION OF SS. SERGIUS AND BACCHUS, CONSTANTINOPLE

Showing Fluted or Melon-Shaped Dome, Supported on Eight Arches and "Squinches." Note Lights Round Dome. P. 206



SECTION OF S. SOPHIA, CONSTANTINOPLE

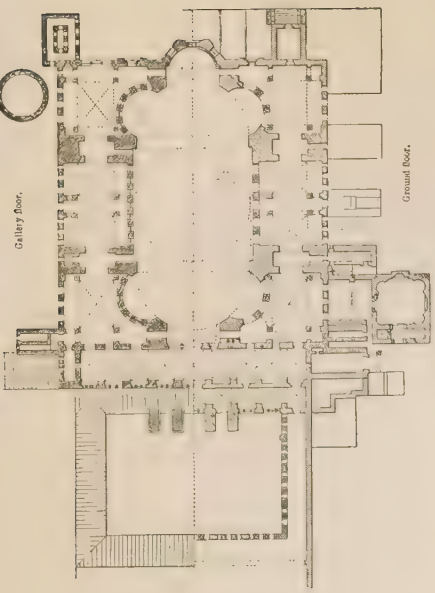
Showing Pendentive Dome. P. 207. Small Diagram, at Right, Shows How a Dome Was Made to Rest on Eight Piers Enclosing an Octagon, by Niches or Squinches.

EXTERIOR OF S. SOPHIA

SHOWING THE IMMENSE BUTTRESSES THAT SUSTAIN THE THRUST OF THE DOME. MINARETS ADDED LATER ARE OF CHARACTERISTICALLY TURKISH TYPE. P. 207

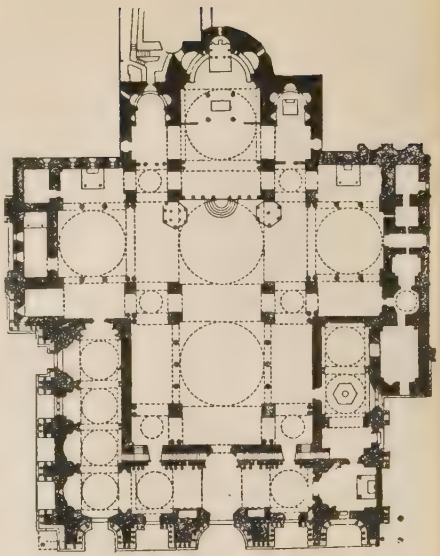
INTERIOR OF S. SOPHIA

SHOWING PENDENTIVES AND THREE OF THE DOME ARCHES (TWO OF WHICH ARE CLOSED AND PIERCED WITH LIGHTS). NOTE ALSO RING OF LIGHTS ROUND NECK OF DOME. PP. 202, 205, 207



PLAN OF S. SOPHIA

P. 208



PLAN OF S. MARK'S, VENICE

P. 209

EXTERIOR OF S. MARK'S, VENICE

SHOWING GOTHIC DETAILS IMPOSED ON BYZANTINE DESIGN. P. 209

SCULPTURED DETAIL

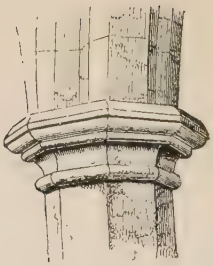
From Doorway of Amiens Cathedral. P. 269

SKELETON STRUCTURE

Showing the Method of Vaulting, by Means of the Pointed Arch, and the Concentration of Thrusts and Counter Thrusts. P. 273

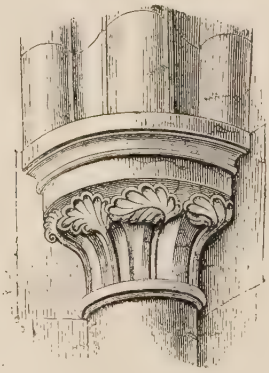
Early English
Haseley, Oxfordshire

Perpendicular
Christ Church
Cloisters, Oxford



Decorated
Sandhurst, Kent

Early
Hereford Cathedral



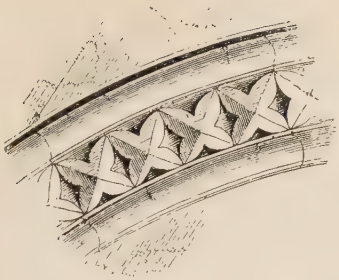
Early
Byland Abbey,
Yorkshire

Decorated
Hampton Poyle,
Oxfordshire

Decorated
Chapter House,
Southwell

Perpendicular
Ewelme, Oxon

Decorated
York Minster

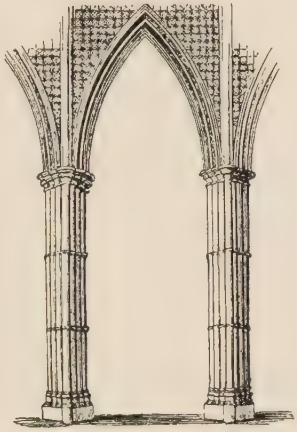


Tooth Ornament
Canterbury Cathedral

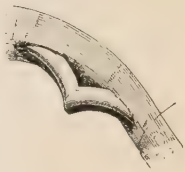
A Cusp
Perpendicular
Period

Diaper of
Four-Leafed
Flower

A Cusp
Decorated Period



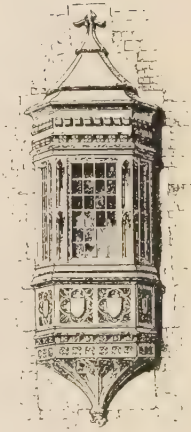
Early English
Westminster Abbey



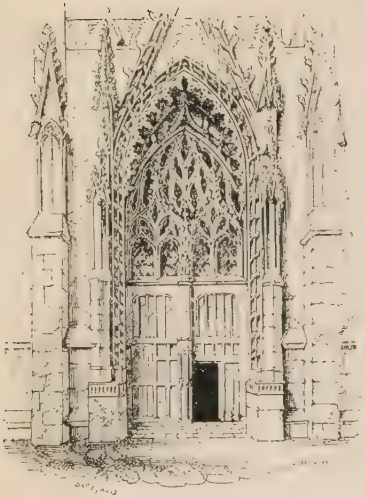
A Cusp
Early English

Niche of
Decorated Period

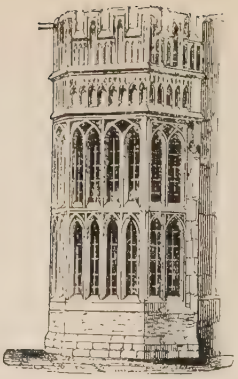
Finial
King's College,
Cambridge



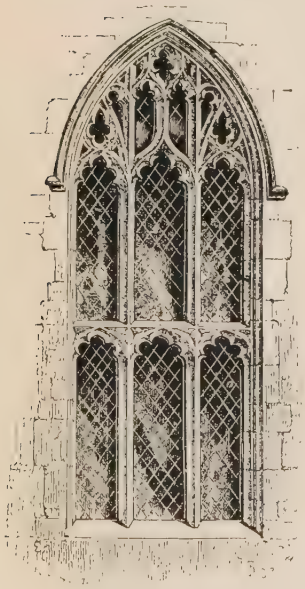
Oriel
Window



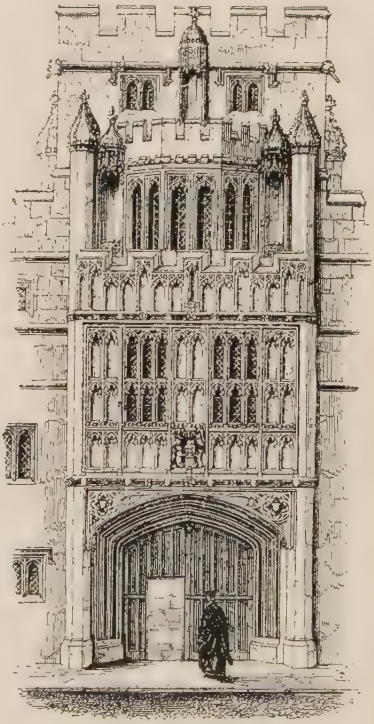
Flamboyant. Doorway
Harfleur, Normandy



Bay Window
Compton Winyate,
Warwickshire

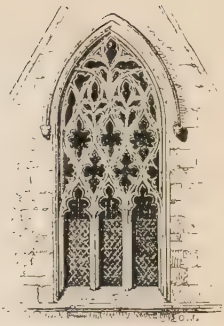


Transition to
Perpendicular
Headcorn, Kent

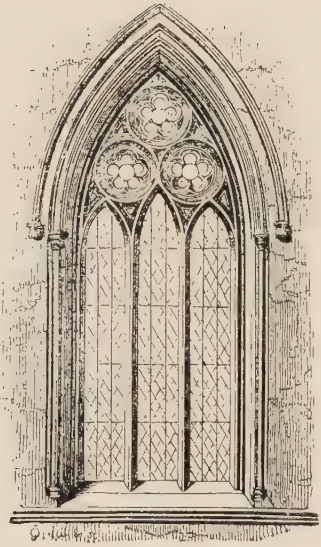


Gateway
Brasenose College,
Oxford

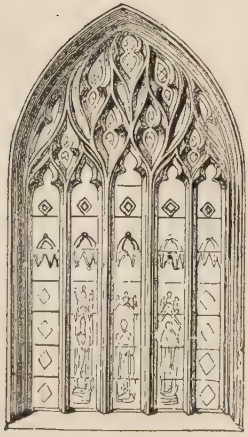
Decorated
Preston, Kent



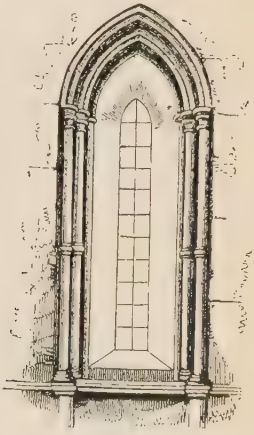
Decorated
Christ Church,
Oxford



Early Decorated
Dorchester,
Oxfordshire



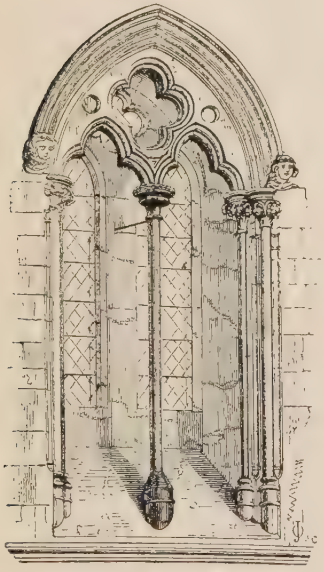
Flamboyant
S. Ouen, Rouen



Early English
Jesus College,
Cambridge

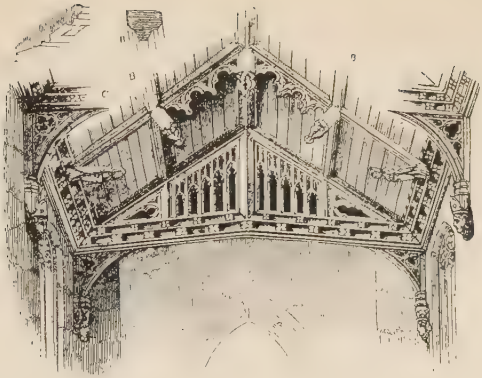
Later Perpendicular
St. Michael's, Oxford

Early Decorated
Plate Tracery

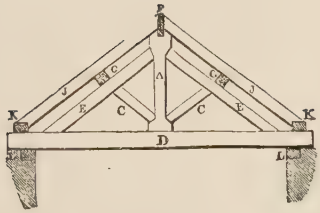


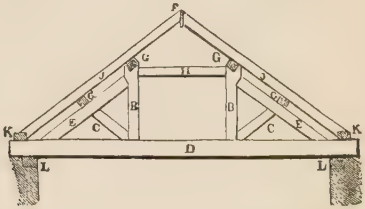
Later Decorated
Plate Tracery
Stone, Kent

Early Perpendicular
King's Sutton,
Northamptonshire

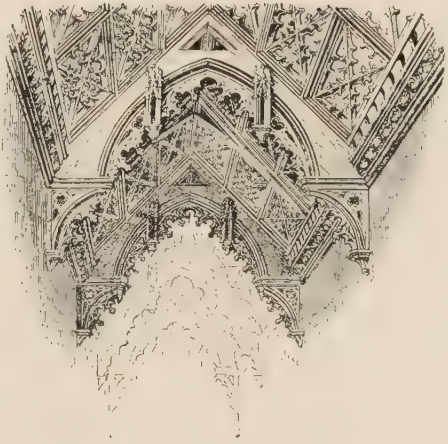


St. Mary's Church,
Devizes, England





A. King Post
B. Queen Post
C. Brace or Struts
D. Tie-Beams
E. Principal Rafters
F. Ridge Pieces
G. Purlins
H. Collar
J. Common Rafters
K. Pole-Plate
L. Wall-Plate



Hall of Weare Gifford, Devonshire, England

GOTHIC DETAIL

By Courtesy of the Brooklyn Museum of Arts

INTERIOR AND EXTERIOR VIEWS OF LICHFIELD CATHEDRAL

Showing the Nave Widening. The Piers Are Set on a Straight Line, and at Each End of the Nave Are Perpendicular up to the Clerestory. Meanwhile the Piers in Between Lean Outward with Increasing Inclination Towards

into: *Primary,* or Thirteenth Century style; *Secondary,* or Fourteenth Century, often called *Rayonnant* from the wheel tracery of the rose windows; *Tertiary,* or Fifteenth Century, called *Flamboyant* from the flame-like shapes of the window spaces. On the other hand, in England, the divisions are: Thirteenth century or *Early English;* Fourteenth century or *Decorated,* because of the increased elaboration both of window tracery and rib vaultings; Fifteenth century or *Perpendicular,* owing to the predominance of vertical members in the tracery of the windows.

The chief fountain-source of the early Gothic development was the Ile de France, whence the new ideas were carried, largely by monastic activity and especially that of the Cistercian order, to England, Germany, Italy, and Spain. In each of these countries their application was coloured by local conditions and England in particular produced a series of buildings, characterised by originality of treatment and grandeur of design. Nevertheless, it is recognised that French Gothic is pre-eminent, not only for the logic and skill with which structural problems were solved but also for sublimity of design, especially in the interiors, and for the sense of proportion that distinguishes the best examples. English Gothic, however, is a noble second.

Before enumerating some of the famous examples of French Gothic, we may summarise the principles and devices more or less common to all Gothic.

Romanesque had substituted equilibrium in place of the inert stability of the Roman architecture. The thirteenth century architects added to equilibrium *elasticity.*

They achieved this by a development of the concentration of strains, which the Romans had invented or applied in the support of groin-vaulting on four piers, and the

Romanesque architects had further developed by the system of rib-vaulting.

Pointed Arch.—The Gothic was structurally evolved out of the rib vaulting and the pointed arch. In the first place, while the Romanesque architects used the rib system solely as a convenience of building, the architects of the Ile de France, adopting it for the same purpose, became conscious of its further possibilities in the direction both of construction and of beauty. The rib, no longer a crude arch of masonry, was constructed of mouldings that made it a feature of beauty, enhanced by the increased height and the finer sweep of line that the skill and taste of the French architects achieved.

In this they were helped by the substitution of the pointed for the semi-circular arch. Not only are the curves of the pointed arch more beautiful, but they lent themselves also to a more daring method of building. By means of them the tops of the longitudinal and transverse arches could be lifted to the level of the diagonal ones, so that the filling in of the *massives* or spaces between the ribs, was simplified. Moreover, the strain of the pointed arch was more directly downward, which brought the main pressure down upon the piers. Advantage was taken of this by clustering small columns around the piers, so that each column carried its own rib, bringing the ribs and columns into a structural harmony and creating a continuous effect of soaring growth from the floor up to the summit of the vaulting. And this effect could be enhanced by the opportunity which the rib construction allowed of lifting the vaulting higher, and so affording space for ample clerestories.

Buttresses.—Meanwhile the lateral strain or thrust of the pointed arch, though less than the vertical, had to be

sustained, and this was done by developing the buttress. These were of two kinds: abutting, as the name implies, either on the nave wall or on the outer walls of the aisles and chevêt. In both cases they were a development of the masonry piers with which the Romanesque architects reinforced the walls. When the buttresses were attached to the outer walls of the aisles and chevêt, they were connected with the nave wall by arches which sprang across the intervening space, and in consequence are known as *flying buttresses.*

Sometimes these buttresses were practically vertical, at other times they descended in offsets or steps, increasing in width toward the ground. Further to increase their resistance they were frequently surmounted by finials or pinnacles. The buttress, in fact, was not only a structural member of great importance, but one of the characteristic elements of beauty in the design.

Concentration of Counter-thrusts.—By the time these two principles—the concentration of thrusts and the counter-thrusts—had been thoroughly worked out, as they were in the thirteenth century, the Gothic architects had extended to the whole edifice what the later Romanesque architects had done for the vaulting. As the latter had been constructed on a framework of ribs, so now the essential structure of the whole edifice became a frame or skeleton, self-supporting, with its strains distributed throughout, as in the muscular system of the human body, and in the "steel cage" construction of modern buildings.

This enabled the Gothic architects to erect loftier and larger buildings and at the same time lighter in appearance, compared with which the Romanesque seem squat and heavy. The French showed a preference for lofty interiors; the English for length of vista, the propor-

tionate loss of height being offset on the exterior by the extra height of the towers and spires.

Another result of the framework system of structure was that the intervening wall-spaces, relieved of strain, could be fully utilised for openings, especially for windows, so important in the duller climate of the north. The clerestory became an important feature of the Gothic cathedral; so also the *triforium,* or gallery round the nave, which, pierced in the thickness of the wall, separated the clerestory and arcade arches. Further, the windows in all the outer walls took on a new importance.

Windows.—The windows, in fact, became another of the distinguishing characteristics of Gothic architecture and the variety in their treatment marks the several centuries of its development. At first there was the plain *lancet* (spear-headed) window, the top of which was composed of two segments of a circle meeting at one point. The segments were inscribed about a triangle, which was either equilateral or isosceles. In the case of the equilateral triangle, whose base was equal to the sides, the distance of the point of the arch from the spring of the curves was equal to the width of the window. On the other hand, in the case of the isosceles triangle, if the base were longer than the sides, the point of the arch dropped lower, while, if the base were shorter, the arch was higher than its width—the true lancet.

Such plain openings, or *lights,* were used either singly or in pairs; and in time two were included within one lancet opening, the space above the heads of the lights being filled with a round or *quatrefoil* light. In this case the upper part or *tracery* had the appearance of having been cut out of one slab or plate of stone, and the pattern in consequence was called *plate-tracery.* Later,

when the number of lights in a window was increased, the tracery above them was elaborated into various geometric designs, technically known as *bar-tracery.* Still later, when the architects had completely solved all the structural problems and the only advance could be made in further elaboration of details, the geometric forms were abandoned for more flowing designs, which are called in French Gothic *Flamboyant;* in English, *Decorated.*

It is to be noted that the change in the treatment of the windows was reflected in the carved ornamental details of other parts of the edifice; especially in the canopies over niches and the embellishment of gables, doors, choir-screens, wall-panelling, finials, and spires. These in the Flamboyant period (fifteenth century) reached a degree of lace-like elaborateness, that, while beautiful in itself, tends to obscure the actual structural elements; thereby marking the decadence of the Gothic style.

This phase was represented in English Gothic by a gradual stiffening of the tracery into rigid forms and barren repetitions. Because of the insistence on rectangular motives it is known as *Perpendicular.*

The windows were decorated with stained glass, the most beautiful remains of which are to be found in the Cathedral of Chartres. They show a prevalence of blue and violet tones and are composed of small pieces of glass, joined by leading. This French method was also imitated in England, as in the early windows of Canterbury; but by degrees an English style was adopted, in which the pieces of glass were much larger, and the subject consisted of large figures beneath traceried canopies, in imitation of the carved work of the sculptors.

In the decoration of **columns** the French long preserved the Corinthian type, but in place of the acanthus, used

foliage forms studied directly from nature. The forms at first were freely conventionalised; but by degrees, as the skill of the carver increased, became more and more naturalistic and thereby less finely decorative. The corresponding progress in England is from conventionalised nature to frankly naturalistic imitation and thence to a somewhat dry and barren conventionalism.

Sculpture.—A conspicuous feature of Gothic decoration is the figure sculpture. It was used with profusion, especially in France, where the monumental treatment of the west fronts gave freest scope for the multiplication of niches, filled with statues. The deeply recessed portals, for example, were flanked with tiers of figures, which were also prolonged into the recessed planes of the arched top, while the lunette, or half-moon space between the arch and the horizontal top of the door, was filled with reliefs of the Saviour or Madonna. Meanwhile, figures beneath canopies stretched in a band across the upper part of the façade, or stood singly in niches that penetrated the surface of buttresses; until, in time, every vantage point, whether within or without the edifice, was enriched with statues. The noblest period of this efflorescence was the thirteenth century, when the French "imagers," particularly, attained a remarkable balance between truth to nature and decorative convention. The statues seem to have grown into human shape out of the very material of the edifice and retain its character. With increasing cleverness, this magnificent conventionalisation passed into naturalistic imitation and the statues seem to be something added for elaboration's sake.

Contrast to Classic.—Gothic architecture, though it developed through Romanesque and Early Christian out of Roman, presents an almost complete contrast to Classic

style. It is an expression of many individualities rather than of conformity. Plans are more or less uniform; generally basilican in France, cruciform in England. But the superstructure, while embodying certain common features, exhibits the freedom of individual treatment, as each city or monastery vied with others in a mighty effort to excel.

A cathedral embodies such miracles of audacity and aspiration, that one scarcely looks in it for that complete harmony of proportion which distinguishes a Classic temple. The latter was the product of men who had ceased to believe in the deities they professed to honour and had made a religion, according as they were Hellenes or Romans, of abstract perfection or of systematised order.

Gothic cathedrals, on the other hand, were the material and spiritual expression of intense religious devotion and of civic pride and freedom. They were the memorials, not of old nations in the decline of their political and social ideals, but of young races, struggling toward nationalism and fired with the splendour of dawning aspirations. No level line of entablature, resting upon columns ever so stately, could embody such elevated enthusiasm. It must mount into the sky, with soaring lines and vaulting arches, spires and pinnacles, ever straining upward; giving voice to the grandeur of concerted uplift. Some of the cathedrals grew up from ground to ridge roof and towers under the guiding mind of one architect; more represent the continuous growth of the community; but in either case embody in their variety and organised complexity the Soul of the Crowd.

For one must not think of them only as temples of worship. They embraced also the functions now dis-

tributed in schools and libraries. They were the shrines of the culture of their day, in which the truths of religion, legends of saints, and the mysteries of belief were unfolded in sculpture, paintings, and stained glass.

Asymmetries or Refinements.—In order to ensure their monopoly the gilds of masons of the Middle Ages jealously preserved the secrets of their art. Accordingly, there are no written treatises of the period. Moreover, with the advent of the Renaissance the Gothic was held in contempt and the indifference to it continued until about the middle of the nineteenth century. Then, in the renewed enthusiasm for Mediæval architecture, buildings were studied, measurements taken, and plans of the old churches and cathedrals were drafted. But the surveyors, having measured the distance between one pair of piers on opposite sides of the nave and between two piers on one side, plotted the plan as if these measurements were uniform throughout the whole nave. In this and in other matters they assumed that the design was symmetrical. The contrary, however, in the case of many churches and cathedrals, has been proved by the recent researches of Professor William H. Goodyear, whose work in connection with Hellenic, Byzantine, and Romanesque refinements or asymmetries has been noted already.

His researches, which have covered most of the Gothic edifices of Italy, many of the most important churches and cathedrals in France, and some in England, prove that the "mysteries" of the Mediæval gilds included asymmetrical refinements. The most important deviations from mechanical formality are as follows:

1. *Widening of the Nave* in a vertical direction.

Where this occurs, each side of the nave leans outward; three methods being employed, though not more than one appears in a given church. In one case, there is a continuous and absolutely straight outward inclination from floor to vaulting. In another, the outward inclinations recede from floor to vaulting in delicate vertical curves. In the third, the piers are perpendicular up to the arcade capitals, where the inclination begins and is continued in straight lines through the triforium and clerestories. In this last case, the angle, formed by the two lines, produces in the large scale of the building the effect of a curve.

The widening in all cases tends to offset the perspective illusion of vertical lines converging toward the vaulting; but also appears to have been preferred for other æsthetic reasons.

Instances of continuous widening in straight lines are found in the **Cathedral** and **Church of St. Ouen,** in **Rouen.** Continuous widening combined with vertical curvature occurs at **Canterbury;** while the perpendicular pier, combined with inclined vaulting-shafts, triforium and clerestories is found in **Amiens** and **Rheims.**

2. *Horizontal Curvature in Plan.* Where this occurs, one of five methods is adopted.

In the first, the piers are set on parallel curves, which consequently are convex to the nave on one side and concave to the nave on the other. In the second, both curves are concave to the nave, which thus widens slightly from both ends toward the centre. In the third, both curves are convex to the centre. In the fourth, the curves are parallel, but reverse their direction at or near the choir, in the form of an attenuated S, or "Hogarth's line of beauty." In all the above instances the curves start at the bases of the piers and continue in the triforium, clere-

story and roof parapets; in certain cases being also repeated in the outer aisle walls.

The fifth system is connected with a special phase of the Widening. For, in this case, the piers are set on a straight line and with the triforium and clerestory are perpendicular from floor to ceiling. That is to say, at the west end and the crossing; but, in between, from both ends, the piers gradually lean outward with an increasing inclination toward the centre of the nave. Thus result curves, concave to the interior, which, however, since the bases of the piers are on straight lines, are found only in the triforium, clerestory and parapet walls. **Lichfield Cathedral** presents an example; **Rheims** another, but with a difference. For while the widening in Lichfield begins at the pavement, that of Rheims starts at the arcade capitals.

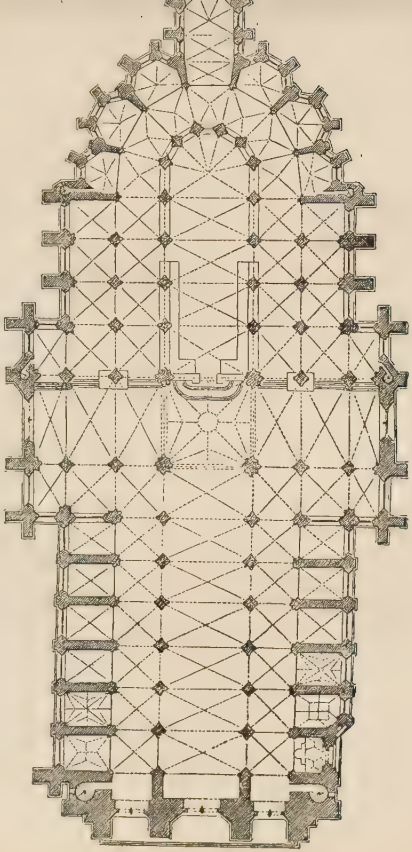
3. *So-called Perspective illusions.* These were intended to emphasise the effect of the choir and generally to increase the suggestion of size and distance. This was accomplished in three ways.

a. By making the nave arcade and the outside walls converge toward the choir.

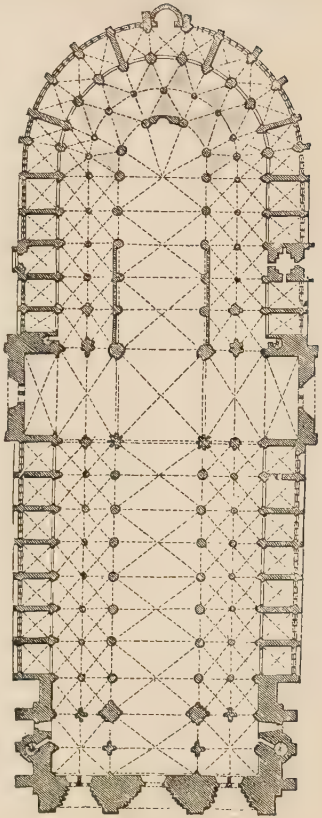
b. By lowering the height of the arches as they approach the choir.

c. By reducing the width of the arches as they approach the choir.

The result of all these asymmetries is to create an impression of elasticity in place of rigidity; an impression, in fact, of life; of the flexible, varied movement of organic growth.



PLAN OF AMIENS
The Perfect Plan of French Gothic



PLAN OF NOTRE DAME

Both Plans Are Basilican and Have Double Aisles and Chêvets. But in Amiens Note the Series of Apses and Their Complicated Vaulting. The Nave Vaulting of Notre Dame Has Six Divisions in Each Double Bay; That of Amiens Is Treated in a Single Bay with Four Divisions by Means of Groin Ribs and Pointed Arches. P. 281

NOTRE DAME, PARIS

AMIENS CATHEDRAL

RHEIMS CATHEDRAL

ROUEN CATHEDRAL

INTERIOR OF NOTRE DAME

INTERIOR OF AMIENS CATHEDRAL

HOTEL DE BOURGTHEROULDE, ROUEN

INTERIOR OF RHEIMS CATHEDRAL

HOUSE OF JACQUES CŒUR

NOW THE PALAIS DE JUSTICE, P...

SAINTE CHAPELLE, PARIS

CHAPTER III

GOTHIC ARCHITECTURE IN FRANCE

The Early French Gothic dates from about 1150 to 1275. It is the period in which most of the great cathedrals were created and in most instances with money contributed by the laity. Roughly speaking it begins with **Notre Dame,** in **Paris,** and ends with the **Cathedral of Amiens.**

Notre Dame, Paris, and Amiens.—The plan of Amiens is regarded as the typical example of French cathedrals. Comparing it with that of Notre Dame one observes that, while both are of the basilican type, the latter is distinguished by having double side aisles enclosing the entire nave, choir, and chevêt. The only other example of this is the **Cathedral of Bourges.** In Notre Dame the transepts do not project beyond the aisles. Further, in the vaulting of the nave the system is still one of square bays, embracing two aisle bays, having six divisions in the vaulting. In Amiens, however, the groin rib and pointed arch have taken the place of the sexpartite plan and the bays are oblong. The elasticity of this later system simplified the vaulting of the curved aisle of the chevêt, whereas in Notre Dame the awkwardness of the rhomboidal spaces was ingeniously evaded by dividing each into nearly equal triangles, which could easily be vaulted. Note in both plans the disposition of the buttresses in the outer walls. It is interesting to know that the area of Notre Dame is about equal to that of the Hypostyle Hall at Karnak, while that of Amiens is smaller,

but the height of its nave is 140 feet as compared with 80 at Karnak.

West Fronts.—In all French cathedrals a special feature of the exterior is the West Front, and a comparison of that of Notre Dame may well be made with the façade of Amiens, which marks the transition to the second style, the *Rayonnant,* and with that of Rheims, the upper part of which marks the transition to the third style, *Flamboyant.* The design of all three is constructively the same—a development of the Romanesque twin towers, connected by an arcade, while a rose or wheel window is placed above the central recessed door. The spires, which were intended to crown the towers, were never built. How they would have affected the appearance may be gathered from a comparison of the West Front of **Cologne Cathedral**—a cathedral that is "completely French in plan, uniting in one design the leading characteristics of the most notable French Churches." (Hamlin.)

It is in the West Front of **Notre Dame** that the structural purport of the design is most definitely pronounced. When we study the vertical elements of the design, we note the division of the façade into three vertical masses corresponding with the interior divisions of nave and double aisles. The division is made by the buttresses which sustain the longitudinal strain of the interior arcades and the outer walls and insure the stability of the towers. And this stability is also associated with a suggestion of upward growth, due to the three setbacks in the profile of the buttresses; which setbacks, it is to be noted, correspond to the three main horizontal divisions of the façade.

The lowest is distinguished by massive simplicity; an effect of solid masonry, the thickness of which is empha-

sised by the deeply recessed door arches, while its simplicity is finely contrasted with the ordered distribution of the sculptured enrichments. Greater diversity characterises the second horizontal division. The openings present a varied patterning of light and shade, while the arcading lends a lightness of effect, echoing also the ordered repetition of the band of figures below, and at the same time involving variety according as the arcade is seen against the sky or is felt as a breastwork of the towers. Lastly, there is a reassertion of the vertical direction in the masses and coupled openings of the towers.

And if the contrast of these several divisions delights us, what is to be said of the balance that correlates these vertical and horizontal features, these various values of form, of plain and ornamental work, of light and shade, into a harmonious unity? It is the product of structural logic and grandeur of feeling; and compared with the reserve of its nobility the west front of Amiens, even the still finer one of Rheims, may seem less impressive. In these, it will be noted, the depth of the door recesses is increased by a pronounced offset in the lower story of the buttress, into which the sculptured jambs of the doorways merge, while the projection thus contrived is crowned with a canopy in the nature of a porch. How does the division at Amiens of the second story into two compare with the simple unity of the one in Notre Dame? Or how does the latter's arcade compare with the corresponding band at Rheims of figures in arcaded niches, surmounted by ornate canopies?

The answer will depend on one's individual temperament; perhaps also on one's mood. It may seem to some that in Notre Dame the variety in unity is worked out with more consciousness of the principles to be applied,

whereas in the other two façades there is a suggestion of freer and more individual treatment.

So much for the exteriors of these cathedrals. It is, however, when we compare the interior of Notre Dame with that of Amiens, that we see in what direction French Gothic was travelling. In the case of Amiens, it is as if some power had pulled the older form upward into a slenderer, more elastic fabric; less massive, possibly less stately, but also less inert, infinitely alive in its inspiring growth, with grace of movement as well as dignity. Notre Dame is still, as it were, anchored to the comparative ponderousness of the Romanesque style. The round columns with capitals of the Corinthian type still follow the model, though not the proportions, of the Roman. Their effect of dumpiness is further increased by the projecting half-round pilaster column that supports the main member of the vaulting shaft. On the other hand, the clustered piers at Amiens are slender, loftier in proportion to width; while a simple logic of structural purpose is apparent in the three-quarter attached shafts which carry the arches and aisle-vaults, and the main shaft of the nave vaulting rises uninterruptedly from the ground. The pier, in fact, operates as an abutting support to the members, which actually sustain the arch and vaulting, and their relation to the pier is asserted by the continuous *abacus* which binds all lightly but firmly together. A corresponding logical simplicity distinguishes the four-part nave vaulting at Amiens, where the pressure is concentrated equally on all the columns in succession without the need of intermediate ones to carry the added transverse rib.

Other great examples of the thirteenth century are the cathedrals of **Laon, Chartres, Rouen, Beauvais, Auxerre,**

Bourges, and **Le Mans**—the last especially celebrated for its superb chevêt and flying buttresses—and the **Collegiate Church** of **S. Quentin.**

Sainte Chapelle.—The problem of concentration of strains was most triumphantly solved in the **Sainte Chapelle** (1242–1247) or Royal Chapel, in Paris, in which the Gothic system of construction may be said to have reached complete maturity. Here the vaulting is carried on buttress-piers, and the spaces between the latter are entirely filled with windows, 15 feet wide and 50 high. The structure below the vaulting is literally a framework, a lantern for the display of the stained glass; "a great translucent tabernacle merely ribbed and braced with stone."

The influence of Sainte Chapelle affected French construction for half a century and was developed to its furthest possible point in **S. Urban** at **Troyes**, begun in 1260.

Second Period.—This cathedral represents the transition into the second period of French Gothic, which may be roughly placed at 1275 to 1375. The principles of construction could be carried no further and the style began to turn in on itself, the designers expending their invention on elaboration of ornament. This period is called in France the *Rayonnant*, from the raylike traceries that were introduced into the rose-windows and from the prevalence of circular forms in windows generally. The façade of **Amiens** is one of the best examples of the style.

Third Period.—By degrees the Rayonnant style passed into the so-called *Flamboyant*, which lasted until the introduction of the Renaissance style early in the sixteenth century. In it the principles of design were gradually

sacrificed to the multiplication of decorative details. Constructive imagination disappeared in a maze of skilful elaboration. The transition from Rayonnant to Flamboyant is shown in the upper part of the west front of **Rheims.** Some of the finest memorials of this period's maturity are to be found in **Rouen:** namely the nave and central tower of the **Church of S. Ouen;** the west portals of **S. Maclou** and the façade of the **Cathedral,** the last being a late example in which the very material of the stone seems to have dissolved into lace. Other instances are the church of **S. Jacques** at **Dieppe, S. Wulfrand** at **Abbeville** and the façade of the **Cathedral** of **Tours.**

Secular Gothic.—Gothic architecture was not confined to cathedrals and churches. Monasteries, hospitals, civic buildings, houses, and castles were erected in profusion, especially during the fifteenth century, though few survive to the present day. But a strikingly picturesque monument is the monastery of **Mont-St.-Michel,** of thirteenth century design, which clusters around the base of the Abbey Church, which was built in the eleventh century and remodelled in the sixteenth. Among the hospitals is that of **Chartres.** Rouen possesses a fifteenth century example of civic architecture in the **Palais de Justice.** The home of a great merchant prince of the same century is preserved in the **House of Jacques Cœur** at **Bourges,** while the east wing of the **Château de Blois** represents military architecture at the commencement of the sixteenth century.

SALISBURY CATHEDRAL

NAVE OF NORWICH CATHEDRAL

YORK MINSTER. WEST FAÇADE

The Finest in England. Lower Part Early Decorated; Upper Late Decorated Towers, Perpendicular. P. 298

LINCOLN CATHEDRAL

Note Screen Effect of West Façade. Western Towers Are Romanesque up to Ridge of Roof; Perpendicular Above. P. 298

WEST FAÇADE OF WELLS CATHEDRAL

P. 298

WINCHESTER CATHEDRAL

BEAUTIFULLY SITUATED IN ITS CLOSE. P. 288

HENRY VII'S CHAPEL, WESTMINSTER

EXAMPLE OF STELLAR AND PENDANT VAULTING. PP. 294, 295

CHAPTER IV

GOTHIC ARCHITECTURE IN ENGLAND AND WALES

The three periods of the Gothic style in Great Britain, corresponding broadly to the Primary, Rayonnant, and Flamboyant, of France are the Early English, Decorated, and Perpendicular.

While the two later phases are distinguished, as in France, by the character of the decorative details, they also involved in England a certain development of constructive principles, particularly in the matter of vaulting, and, as a result of this, in the shape of arched openings.

Periods.—The Early English style, also known as Lancet, First Pointed, Early Plantagenet, or Thirteenth Century, lasted approximately from 1189 to 1272, covering the reigns of Richard I, John, Henry III, and Edward I.

The Decorated, also known as Geometrical or Curvilinear, Middle Pointed, Later Plantagenet, or Fourteenth Century, comprises the reigns of Edward II, Edward III, 1307–1377.

The Perpendicular, also called Rectangular, Late Pointed, or Fifteenth Century, extends from 1377 to 1558, including the reigns of Richard III, Henry VII, and Henry VIII, Edward VI, and Mary. It continued, that is to say, through the period of the Reformation and Dissolution of Monasteries, until it gradually became mixed with elements borrowed from the Renaissance

style. The style which prevailed from Henry VII to Mary is sometimes specially designated Tudor.

Unlike the French cathedrals, which were mostly erected for the secular, that is to say non-monastic, clergy with funds provided by the laity, the English were frequently attached to a Benedictine or Augustine monastery. In consequence they retain some of the features of a monastic establishment, especially the cloisters and chapter-house, or room for the transaction of business by the bishop's or abbot's chapter (council).

According to the circumstances of their founding, the English cathedrals are divided into three classes.

Three Classes of Cathedrals.—I. Thirteen cathedrals of the Old Foundation, which being served by secular canons, underwent no change of control at the Reformation. Though not attached to monastic buildings they have chapter-houses and in some cases cloisters. They include: in England, **Chichester, Exeter, Hereford, Lichfield, Lincoln, S. Paul, London, Salisbury, Wells, York**; and, in Wales, **Bangor, Llandaff, St. Asaph's,** and **St. David's.**

II. Cathedrals of monastic or New Foundation; so called because they were originally attached to monasteries and at the dissolution of the latter by Henry VIII were re-established under chapters of dean and canons. They include seven, originally attached to Benedictine Houses—**Canterbury, Durham, Ely, Norwich, Rochester, Winchester, Worcester,** and one Augustine foundation—**Carlisle.** Further, they comprise the following churches, converted into cathedrals by Henry VIII—(Benedictine): **Chester, Gloucester, Peterborough**; (Augustine): **Bristol** and **Oxford.**

III. Cathedrals of Modern Foundation, converted

Churches, **Birmingham, Liverpool, Manchester, Newcastle, Ripon, St. Albans, Southwark, Southwell, Truro, Wakefield.**

Comparison with French.—The study of English cathedrals is more complicated than that of French, owing to the long period over which their construction extended. Additions were made as funds permitted and to meet the growing needs of the community, or restorations replaced earlier buildings that had collapsed, as some did, or had been destroyed by fire. Accordingly, each example is more or less an epitome of all the phases of the Gothic style; often combined with Norman (Romanesque) and also with fragments of Anglo-Saxon architecture. They are in a very full sense an expression of the nation's growth.

English cathedrals differ from the French in being lower, longer, and narrower. The extreme length of the plan is in France seldom more than four times the width, whereas in England it sometimes reaches six times. The square east end is characteristic; the transepts project further; these are seldom double aisled and have few side chapels; the plan is inclined to cruciform, and a prominent feature is a central tower over the crossing, sometimes surmounted by a spire. The choir is proportionately longer and occasionally projects into the crossing or even a little way into the nave. At the east end of it is the *presbytery* or sanctuary; beyond which is a *retrochoir,* containing an ambulatory or procession passage, one or more chapels to saints and a *Lady Chapel,* dedicated to the Blessed Virgin. The arcading is more closely spaced than in French Cathedrals and generally the relation of the parts is less large in char-

acter. The triforium in many cases is highly elaborated; in some it is noticeably reduced and occasionally omitted.

The doorways are often placed on the north and south sides and provided with porches. The windows, in the Early English Period, are either of simple lancet form, used singly or grouped in pairs or threes, united over the top by tracery; or the lights terminate at the top in trefoils or cinquefoils, a heading rare in France known as *cusps*. Plate tracery is comparatively rare in England, and the tracery of the Decorated Period is of a geometric character. Gradually the tracery becomes more flowing, including lines of double curvature, which somewhat resembles the French Flamboyant. Finally in the Perpendicular Period, the pointed arch of the window becomes flattened until it reaches the slight curve of the so-called four-centre arch. The window is divided up into many lights (nine in **King's College Chapel, Cambridge**) by vertical mullions, which in the larger examples are reinforced by horizontal transoms, thus producing parallel rows of cusped lights, surmounted in the heading by small replicas of the latter in several tiers—an arrangement somewhat rigid and monotonous.

The mouldings are generally richer and more varied than in French cathedrals, and, owing to their being nearer to the eye, are wrought to a greater refinement of finish.

Ornament.—The characteristic ornament of the Early period is the "dog-tooth" used profusely in hollow mouldings. The foliage is conventionalised, crisply carved in bold curving and curling masses, known as

"stiff-leaf foliage," which in the case of capitals sometimes projects beyond the abacus. The flat surfaces of the walls are often diapered.

In the Decorated Period the characteristic ornament of hollow mouldings is the "ball-flower"; but the "four-leaf flower" is frequently used. By degrees other motives of ornament were drawn from ivy, oak, and vine leaves; and the treatment grew more and more naturalistic.

In the Tudor period the special ornament is the Tudor rose, two concentric layers of five petals, symbolising the union of the Houses of York and Lancaster. Other frequent motives are the portcullis and, in reference to the continued claim of the English kings to the throne of France, the fleur-de-lys. The traceries of the windows were repeated in the panelling of the walls and in the elaborate choir and chancel screens, which were a special feature of the period.

Stained Glass.—Stained glass played a very important part in the embellishment of cathedrals and churches. York Minster presents an opportunity of studying the progress of the art through some four centuries, as it was practised, not only in England, but throughout Europe.

The early examples show the influence of the Byzantine enamellers. The windows are filled with jewel-like patterns composed of small pieces of glass, enclosed with lead-lines, like the "cloisons" in cloisonné enamels. Gradually the figure subject becomes more pronounced; at first in comparatively small medallions set in a frame of tracery, then increasing in size until they become the

leading motive. They are surmounted by canopies, enriched with ornament, as in the sculptured work of the period, and the character of the ornament reflects that of the carving.

It is interesting to note that until the sixteenth century no use was made of painted glass. The material was what is known as "pot-metal"; that is to say, glass dyed with colour while in a condition of flux. The quality of these pieces of glass was translucent, permitting the passage of light, though not transparent. However, the deep red of ruby was so dense that the practice was adopted of fusing a layer of ruby on a layer of colourless glass and then of grinding away portions of the ruby, so as to brighten the mass by the contrast of white. In time this method of "flashing," as it was called, was extended to other colours. Further, about the beginning of the fourteenth century it was discovered that a solution of silver applied to glass would under the action of the firing impart to it a "yellow stain." Thus it was possible to infuse a yellow into the whole or parts of the colourless glass, and to introduce yellow into the "flashed" parts of blue and ruby, while the stain applied to greyish blue produced delicate tones of green.

Another process was developed; namely, the use of enamel paint. A pigment composed of powdered coloured glass, mixed with some such binder as glue, was applied with a brush, after which the glass was subjected to a comparatively low degree of heat, sufficient to flux the pigment and fuse it into the body of the material. At first the only colour employed was brown, which being opaque in the firing was used for the line of the drawing. It was even used for shading, the paint being spread in gradations of thickness and, when dry, scraped off in

parts or reduced to a stipple of tiny dots, by the action of a stiff brush. This process was also applied upon the yellow stain and comparatively colourless glass (*grisaille*) to produce diapers of pattern and other ornament.

Finally, about the beginning of the sixteenth century, enamel paints of other colours were employed, and painting *upon* glass marks the last stage in the European technique of window glass. While the colours, unlike the opaque brown, were translucent, they lacked the brilliance and purity as well as the richness and depth of pot metal. But by this time, as in other kinds of decoration, the designers were absorbed with details. A favourite task enforced upon them was the insertion of heraldic insignia in the windows, and brushwork was the only method that could reproduce the complicated devices of "quartering" the coats of arms. Window decoration, in fact, had ceased to be an art of glass work and become confused with the art of painting. The end of glass decoration was completed when the window was filled with rectangular panes of white glass, on which the painter depicted figures of saints or symbolical nymphs, as Sir Joshua Reynolds, for example, did in the windows of the ante-chapel of **New College, Oxford.** This masterpiece of the trivial is popular, but represents a debased taste, founded upon a complete ignorance of the glass-technique, for Sir Joshua called in to his assistance a china painter!

Vaulting.—The treatment of the roofing displays more variety in English Gothic than in French. Wooden ceilings, which we will return to presently, often replaced the vaulting and the latter also became distinguished by

elements that were only sparingly, if at all, employed in France. The French, as we have noted, constructed the diagonal as well as the longitudinal and transverse ribs with pointed profiles, so that their vaults were domical. The English, on the contrary, frequently used the half-circle for the diagonal ribs. Thus the vaults have level tops or *ridges,* the latter being marked by ridge ribs.

Tiercerons.—In England, during the thirteenth century, as in France, the plain four-part ribbed vault was used, as in the naves of **Salisbury** and **Gloucester,** and the aisles of **Peterborough.** Toward the end of the century, however, came in the use of subordinate ribs, called *tiercerons.* These were introduced between the transverse and diagonal ribs, as may be seen in the nave vaulting of **Westminster Abbey.** Their purpose was to decrease the pressure on the main ribs, and for their own further security a *ridge* rib was employed for them to abut on at the top.

Liernes.—During the Decorated Period of the fourteenth century a new set of ribs were introduced, which were known as *Liernes*—holding or binding ribs. The name was applied to any rib, other than the ridge rib, that did not spring from an abacus. They were ornamental rather than constructional and were freely employed to form a network of geometric pattern over the vaulting. Meanwhile, although they increase the apparent complexity of the vaulting, the actual constructive plan of the latter is not affected and may be simply four part. Such multiplication of ribs reduced the size of the intervening spaces or panels, whence this kind of vaulting is sometimes called *rib and panel.* It is also named *stellar* vaulting from the star-shaped pat-

terns produced by the ribs. Examples are to be found in the choirs of **Gloucester, Wells, Ely,** the nave of **Tewkesbury Abbey,** and the vaulting of **Winchester Cathedral,** as rebuilt by William of Wykeham (1390).

Fan Vaulting.—The development of the Perpendicular Period or Fifteenth Century is that of *Fan Vaulting,* examples of which occur in **Henry VII's Chapel, Westminster; Divinity Schools, Oxford; King's College Chapel, Cambridge;** the **retro-choir, Peterborough; Gloucester Cathedral,** and **St. George's Chapel, Windsor.** In this type of vaulting the ribs are all of equal curvature, and separated from one another by equal angles, terminating at the top in a circular ridge, which leaves a series of flat lozenge-shaped spaces.

Pendant Vaulting.—A further development, often used in connection with "Fan Vaulting," as in Oxford Cathedral and Henry VII's Chapel, is the device known as *Pendant* vaulting. It was at first adopted to sustain the flat spaces of the vaulting and consisted of a stone support suspended from an arch concealed above the vaulting. It was, in effect, a prolonged keystone, and its lowest part formed a base from which to build up. For by this time the old method of constructing ribs and laying panels upon them had been abandoned, and the vaulting was constructed of parts, interlocking like a Chinese puzzle.

A beautiful feature of English vaulting occurs in the polygonal Chapter Houses, in which the ribs radiate from a central column to the sides and angles of the polygon. "If these vaults are less majestic than domes of the same diameter, they are far more decorative and picturesque, while the Chapter Houses themselves were the most striking and original products of English Gothic.

Every feature was designed with strict regard for the structural system determined by the admirable vaulting and the Sainte Chapelle was not more logical in its exemplification of Gothic principles." (Hamlin.) Among the finest examples are those of **Westminster, Wells, York, Lincoln,** and **Salisbury.**

Open Wood Roofs.—The Saxon use of timber construction survived as a tradition and was developed by the Gothic builders, in the interior roofs that sheathed the vaulting and with specially fine effect in the ceiling-roofs of churches and halls. The simplest principle of it is the so-called *tie-beam* roof. In this, a succession of rafters slope up to each side of a ridge beam and are prevented from spreading by beams that tie them together at the foot. If the pitch of the roof were high, the construction would be strengthened by a post supported on the centre of the tie-beam, which is called a *King-post.* Instead of or in addition to this, two posts might be erected between the centre and the ends of the beams, known as *Queen-posts.* Each complete section of this arrangement is called a *truss.* It might be further stiffened by *struts,* that is to say cross pieces which, instead of tying the parts, keep them from being drawn together.

The next principle is the *trussed-rafter* or *single-framed* roof. Since the transverse beam might interfere with the vaulting, it was replaced by one or more cross-beams near the upper angle of the roof known as *collars.* These might be further stiffened by braces, fixed diagonally from the under side of the beam to the rafter. Further, short struts or upright posts might be added near the lower angles, connecting the rafters with short,

horizontal pieces, attached to the ends of the rafters and resting on the wall. These were called *sole-pieces* and represent what would be left if the intermediate part of the tie-beam were sawn away. Sometimes an arched profile was secured by curving braces fixed to the rafters and collars. Or the collars were omitted and the curved braces were carried up to the ridge-beam, forming the variety of roof styled *arch-braced.* Frequently this style of roof was sheathed on its under side with boards decorated with ribs and bosses.

The further development was the *hammer-beam* roof, which came into general use in the fifteenth century. The hammer-beam resulted from the lengthening and thickening of the sole-piece and was supported by a curved brace, connecting its under side with a vertical piece, attached to the wall and hence called *the wall-piece.* The combination of this construction with struts, collars, and curved braces produced the magnificent effects to be seen in the roofs, for example, of **Westminster Hall** and the **Hall** of the **Middle Temple.**

Exteriors.—Unlike the French cathedral, which is apt to be crowded upon by other buildings, the English usually stands amid smooth lawns and shade trees—a secluded spot known as the "close," around which are the houses and gardens of the dean and canons. Cloisters also frequently add to the spirit of quiet. Durham is superbly set upon a steep bluff above the River Wear. In harmony with the charm of the setting a noble picturesqueness characterises the English cathedral. Flying buttresses, it is true, are little in evidence, owing to the comparative lowness of the structure and to the fact that they are often concealed in the aisles, but the

façades, because of length of transepts and additions of Retrochoir, Lady Chapel, Chapter House, Cloisters, Chantries, and so forth, are more irregular than in the French. There is greater variety of points of view; frequent surprise of vistas, while from near and far the great central towers are features of impressiveness and grandeur, and the occasional spires, the most beautiful of which is **Salisbury's**, are singularly sublime.

On the other hand, the west fronts have not the special splendour of the French cathedrals. Yet there are a few exceptions. That of **York Minster**, for example, with its immense window and twin towers, is in respect of size, decorativeness, and proportion a magnificent façade. Those, again, of **Lichfield** and **Wells** are grand and beautiful, while the west fronts of **Lincoln** and **Peterborough** are strikingly imposing and picturesque.

Both the latter are virtually screens pierced with deeply recessed openings that include windows above doors. The designs are arresting and boldly picturesque, but arbitrary in invention. For the façades, being applied to the building and not growing out of its internal purpose, lack the dignity of logical arrangement and, moreover, are deficient in proportion of parts and harmonious unity.

Interiors.—Grand picturesqueness, also, rather than ordered grandeur, characterises the English interiors. Lower and narrower than the French, and longer, they have not their stately unity and sublime simplicity. But their very length and the closer intercolumniation of the pillars and the ampler size of the transepts present a greater variety of vistas. And the picturesqueness is also increased by the variety and superior elaboration of the vaulting and the profusion of decorative features,

the frequent use of black Purbeck marble in the cluster columns, the number of fine mouldings on the arches, the richness and variety of design in the triforium and clerestory, the wealth of carved ornament in the wooden screens and choir-stalls, and the marble enrichments of the numerous tombs. On the other hand, though an English Cathedral is more decorative architecturally, it lacks the warmth and colour that the embellishments of a Roman Catholic ritual impart to the French examples.

Secular Examples.—The interest of English Gothic extends beyond cathedrals to the profusion of edifices—chapels, churches, colleges, hospitals, and almshouses—that stud the country. Oxford presents a mine of study; Cambridge has its splendid examples; there are Royal Chapels of magnificence, such as **St. George's Chapel, Windsor;** and town churches of extraordinary beauty, while scarce a village, however tiny and remote, but has an architectural treasure in its little church, sheltering the graves of its quiet "God's Acre."

The homes of the nobles, during the Norman Period, had been frankly armed castles, including an outer "bailey" or court, an inner bailey, and a donjon or keep, surrounded by a moat and ramparts. In the fifteenth century the idea of domesticity increased, other buildings for various uses clustered round the main ones and the hall became the centre of the life of the inmates. At first there was a central fireplace, where the logs were piled on dogs, the smoke escaping through a flue or opening in the ceiling. The need of protecting this led gradually to the erection on the roof of a lantern-like turret, technically known as a *louver,* which became a characteristic feature of the exterior of a hall, even after the central fireplace had been moved to one of the walls and

connected with a chimney. By this time the fireplace had grown to be the distinctive feature of the hall, embellished with a massive carved chimney-piece, around which the lord and his lady and guests gathered, while the house-fool laboured at his quips, or some wandering minstrel regaled the family with song or story, while the retainers of the establishment sat in the outer ring on the rush-strewn floor. For the hall was the common dining-room and recreation centre of the whole establishment, and on a dais at one end stood the high table at which the family and guests were served at meals, the retainers occupying the body of the hall. A salt-cellar was conspicuous in front of the lord, symbol of hospitality and also of class distinction, since the persons of "inferior quality" were entertained "below the salt." In earlier times the hall also served as a sleeping place for the retainers.

By degrees, however, as ideas of comfort and privacy increased, this habit was abandoned. Withdrawing rooms or bowers opened from the dais of the hall for the private use of the lord and lady, and bedroom accommodation was improved. And the progress toward greater domesticity was assisted by the discovery of gunpowder, which rendered the old system of fortification useless for defensive purposes, so that the idea of a castle was gradually superseded by that of a mansion.

RATISBON CATHEDRAL
P. 302

STRASBURG CATHEDRAL
P. 302

TOWN HALL OF MUNSTER

P. 305

CATHEDRAL OF S. GUDULE, BRUSSELS

P. 307

COLOGNE CATHEDRAL

P. 302

CLOTH HALL OF YPRES

Oldest of the Guild Halls (1304). P. 307

TOWN HALL, LOUVAIN

P. 307

TOWN HALL, BRUSSELS

THE EARLIEST OF THE FLEMISH GOTHIC HALLS (1377). P. 307

ANTWERP CATHEDRAL

P. 308

MECHLIN CATHEDRAL

TOLEDO CATHEDRAL

NOTE THE CORO, OCCUPYING THE THREE LAST BAYS OF THE NAVE, AND OBSTRUCTING VIEW OF THE SANCTUARY BEYOND THE CROSSING. PP. 308, 309

BURGOS CATHEDRAL

OPEN-WORK SPIRES RECALL COLOGNE. P. 308

CHAPTER V

GOTHIC ARCHITECTURE IN GERMANY, THE NETHERLANDS, AND SPAIN

In Germany the Romanesque style had been developed on lines so monumental that the architects were slow to abandon it for the Gothic. Accordingly, while the French and English worked out the constructive principles that produced a new style, the Germans were content to borrow its features, especially as represented in the French cathedrals. They were drawn to this imitation through the commercial relations which existed by way of Burgundy between the cities of Germany and Northern France. For at the commencement of the thirteenth century the cities played a most important rôle in the political as well as the economic life of Germany.

Kings and emperors, recognising the value of their support, had conferred special privileges upon them, which in times of confusion they had themselves increased until they were practically self-governing. Their power rivalled that of the duchies, countships, and other governments which made up the fluctuating aggregation of authorities comprised in the empire. Moreover, the cities had increased their power by combinations. The most important of these were the Rhenish Confederation and the Hanseatic League of German merchants, the latter extending its activities to points outside of Germany, as far distant as London and Novgorod.

Another phase of the prominence of cities lay in the

fact that they were frequently the sees of Archbishops, who were fiefs of the empire and vied with other feudal lords in political importance. Meanwhile, this period was marked by a revival of culture. "It was a period of great men and great ideas, of dramatic contrasts of character; on the one side a broad humanitarianism combined with a gay enjoyment of the world and on the other an almost superhuman spirituality that sought its ideal in a rejection of all the world could give." It was the age of the Minnesinger and of the rise of the Friars; an age, too, in which the voice of the laity was raised on behalf of purity of religion and religious tolerance. This higher spirit of the time found expression both in literature and architecture, and, though in the latter field some noble palaces and castles were created, the chief glory is to be found in the cathedrals and town-halls—the embodiment of the religious and civic life of the burghers.

The examples of German Gothic cathedrals are few as compared with those in France and England. Of the three finest—**Strasburg, Ratisbon, Cologne**—the last is the most magnificent and is also the largest of all Mediæval cathedrals after **Seville** and **Milan.** Its plan is derived from Amiens, while the edifice embraces the chief features of many French cathedrals and is, in fact, an epitomised imitation of French Gothic.

Cologne.—Meanwhile, there is a German legend of the origin of the design, which is interesting for the light it throws on the Mediæval spirit. While the architect, bidden by the archbishop to build the noblest shrine in Christendom, sat beside the river pondering, an old man approached him and, having traced in the sand a plan, immediately obliterated it. But the architect had seen

enough to know that the plan was the one that was dawning in his mind yet still eluded him. When the old man consented to give it and moreover promised the master-builder a life of fame and riches, demanding only his soul in recompense, the master-builder's eyes were opened and he cried "Get thee behind me, Satan." Then he told his confessor, who contrived a scheme whereby the devil might be circumvented. Satan had promised to return, bringing the plan. The master-builder kept the appointment and, snatching the precious document with one hand, in the other brandished a fragment of the True Cross. "I am vanquished!" exclaimed Satan; "but you shall reap no benefit, through your treachery. Your name will be forgotten and your work will never be completed."

Time, however, discounted the Devil's curse, for the cathedral was completed during the nineteenth century. It had been begun in 1270 and in all the additions subsequently made the original design was adhered to. Hence **Cologne** presents a very remarkable example of structural unity; and, by the same token, a rather chill precision, product of imitation, instead of a growth which reflects the changing style of successive centuries.

The plan, as at Amiens, includes double side-aisles and a chevêt of seven apses and an ambulatory, but its transepts are extended by an extra bay and one bay of the nave is included in the western entrance. Here the German fondness for towers and spires, already noted in their Romanesque architecture, finds expression in twin towers, crowned with spires of openwork tracery. This last feature is a characteristic of German Gothic. The transition from the tower to the spire is admirably arranged so as to enforce the function and beauty of each;

and the effect should be compared with that of **S. Stephen, Vienna.** In the latter the transition is more gradual, so that the spire seems to start from the ground and, notwithstanding the splendour of the whole, "it lacks the vigour and accent" that a better definition of tower and spire produces.

S. Stephen is an example of the so-called "Hall Church," in which the nave and aisles are of equal height. This typically German feature, seen also in **S. Lambert, Hildesheim, S. Quentin, Mainz,** and **S. Elizabeth, Marburg,** abolishes the clerestory and triforium and thus dispenses with flying buttresses. It reduces the importance of the nave and, while giving the interior an impression of superior spaciousness, minimises the variety and picturesqueness of the vistas. The nave and aisles are covered on the exterior by a single roof of high pitch.

The German builders made up for their lack of originality by extreme skill of handicraft, which tended to over-elaboration and a merely mechanical excellence. This was displayed in the increasing intricacy of the window traceries, which were more regarded than the proportions of the window openings. Thus, an excessive height was given to the clerestory windows and in many cases the opening is too narrow for its height. A characteristic which often appears is the *double tracery;* that is to say, the employment of tracery on both the outer and the inner wall surfaces.

Piers usually take the place of columns and are treated as lofty posts for the support of the vaulting, their surfaces being frequently indented with niches bearing statues. The vaultings are quite often distinguished by complicated ribs, which, however, are not employed so constructively as in England, but rather as decorative

details. The mouldings show a steady growth away from simplicity toward increased complexity, until in the fifteenth century occurs the characteristic feature of "interpenetration." In this two separate sets of moulding are interwoven, alternately appearing and disappearing in and out of the same stone. Where foliage is thus used with intertwining branches the forms are treated naturalistically; and this aptitude for exact imitation led also to the occasional abandonment of the more formal tracery of windows in favour of "branch tracery" or the representation of branches of trees—another instance of preoccupation with technical execution rather than with design.

While the stained glass is good, the iron-work is a special characteristic of German ornamentation. Another typical feature is the Tabernacle for enshrining the Host. It is a structure of stone or wood, standing independent of the altar, rising to a considerable height in the form of a tower and spire, richly decorated.

In the north, as at Lübeck and neighbouring cities in the valley of the Elbe, the lack of stone led to the use of brick, and the substitution of moulded and coloured brickwork for sculptured ornament.

Secular Buildings.—The most famous of the Gothic castles is **Marienburg** in Prussia, including the chapel and chapter house and the Great Hall of the Order of the German Knights. Other examples are **Heilsberg**, in **East Prussia** and the **Albrechtsburg** at **Meissen** in Saxony. Among the finest of the Town Halls are those of **Ratisbon, Brunswick, Halberstadt, Hildesheim,** and **Munster**, and the brick examples of **Breslau** and **Lübeck.** In domestic architecture the roofs were carried to a remarkable

height, consisting of several stories lighted by dormer windows; the space being utilised for storage and the drying of linen in the monthly wash. And a picturesque diversity is given to the character of the streets according as these roofs run parallel to it or at right angles. In the latter case the gables mount up with stepped outlines, and often are decorated with frescoed paintings.

NETHERLANDISH GOTHIC ARCHITECTURE

The Gothic architecture of the Netherlands appears at its finest in Belgium, where it is distinguished by a mingling of French and German influence. The latter is to be accounted for chiefly by the trade relations which existed between the great commercial cities of Germany by way of the Rhine, with such centres of commerce as Louvain, Brussels, Ghent, Antwerp, Mechlin (Malines), Ypres, and Bruges. On the other hand, the province of Flanders came under the French influence through the marriage of Margaret of Flanders with the first Duke of the French royal house of Valois, whose successors gradually brought the whole of Belgium under their rule. Further, the Abbey of Noyon early established close relations with that of Tournai, and in this way the religious architecture of France penetrated Belgium. Owing to their pre-eminence in weaving the Netherlandish cities became the most prosperous of the period and this is reflected in the florid decoration of the later ecclesiastical building, as well as in the magnificent Town, Trade, and Guild Halls, which are the special distinction of Netherlandish architecture.

Guild Halls.—They present a general similarity of character. The façades mount in several stories, which are defined by bands of ornament or string-courses and

pierced with rows of pointed windows. These are framed with rich traceries of carved work and separated by canopied niches, designed for and often filled with statues. The façades terminate at the spring of the roof in an adaptation of the Romanesque arcaded eaves, which occasionally project like a continuous balcony, while balconies with traceried parapets often decorate the gabled fronts. The corners of the façade are occupied by towers, frequently carried above the line of the eaves, in pinnacle-like structures, the stories of which are marked by balconies. The roofs have a steep pitch and are enriched with dormer windows and decorated chimneys.

The oldest of these beautiful edifices is the Cloth Hall of **Ypres**, erected in 1304, while other notable examples are those of **Louvain, Mechlin, Ghent.** The earliest of the Town Halls is the imposing one of **Brussels** (1377), distinguished by its graceful tower and spire. The right to attach a belfry or beffroi to a town hall was a special privilege, granted by charter, and the bell-towers of Netherlandish cities are among their most picturesque features. That of **Bruges**, which forms the theme of one of Longfellow's poems, is famous in the annals of the city. It surmounts the central mass of a façade plainer than those described above, offering more wall spaces and representing another type of Gothic façade peculiar to the Netherlands.

Ecclesiastical Buildings.—The earliest example of Gothic work in ecclesiastical buildings is said to be the choir of the **Cathedral of S. Gudule** in **Brussels. Tournai Cathedral**, erected between 1146 and 1338, illustrates three successive periods. The nave is Romanesque; the apse-ended transepts mark the transition stage, and the choir, with its complete chevêt, the fully developed

Gothic. But the largest and most magnificent cathedral of the Netherlands is that of **Antwerp,** distinguished by three aisles of equal height on each side of the lofty nave and by narrow aisleless transepts. The west front, flanked by towers, one of which has been completed by a spire of extreme richness and grace, belongs to that later period (1422–1518) when the taste for decoration had become somewhat florid. Other notable **Cathedrals** are those of **Ghent, Bruges, Ypres, Utrecht,** and of **Haarlem** and **Dordrecht** in Holland.[1]

SPANISH GOTHIC

It was in the north of Spain, following the gradual destruction of the Moorish rule and the replacing of the Crescent with the Cross, that Gothic art took root. The time is the thirteenth century, when Ferdinand (1217–1252), canonised as saint, united the kingdoms of Leon and Castile, and James, called the Conqueror (1213–1276), carried the conquest through to the east so that only Granada remained in the grip of the Infidel.

While it is supposed that Moorish workmen were employed in the cathedrals, the designs were derived from French examples, with certain borrowings from the German. Thus the original of **Leon Cathedral** was Amiens, from which, however, it differs in the larger area of its window spaces; while Notre Dame was the model for the Cathedrals of **Toledo** and **Barcelona;** and the west front of **Burgos,** with its openwork spires, recalls Cologne.

Among the characteristic features of Spanish cathedrals are: the occasional use of cloisters; the excess of width in proportion to the length; the use of a *cimborio*

[1] The above was written before the revolting desecration of Belgium by the German invasion.

or lantern over the crossing; the placing of the choir or *coro* west of the chancel, so that it occupies the centre of the edifice and with its high enclosures blocks the vistas in all directions; an elaborate treatment of the vaulting, prompted by decorative rather than structural considerations, and a general tendency, especially in the later work, toward excessive embellishment.

The largest cathedral in Spain, the largest, indeed, of all mediæval cathedrals, is **Seville**, which was erected on the site of a mosque. It has four side aisles, each of which corresponds in height and width to the nave of Westminster Abbey, yet the length of its nave is little more than that of the latter's. **Toledo**, again, has four aisles and a nave, recalling the plan of Bourges, which it follows in length, though it is wider by fifty feet.

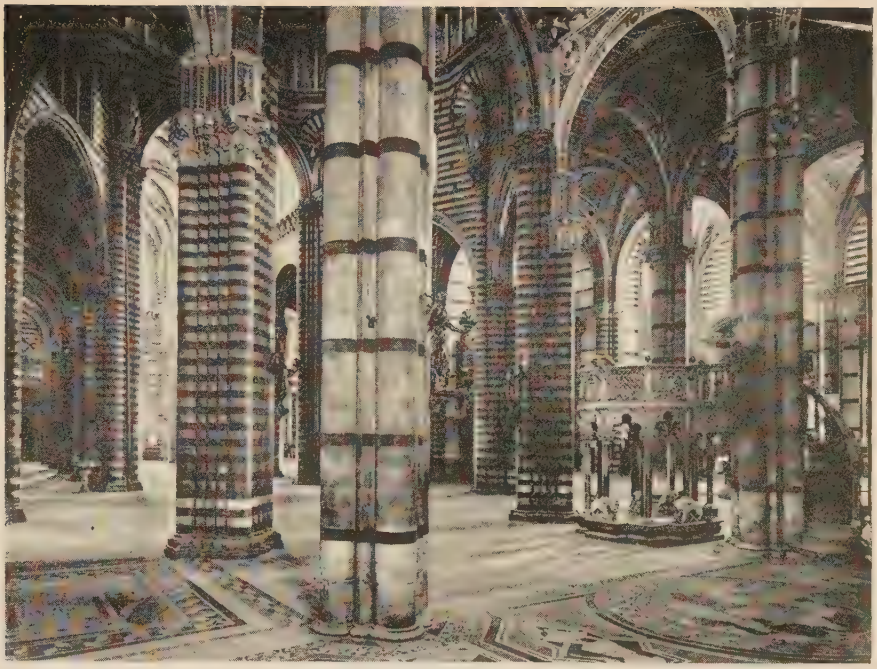
Retablos, Rejas.—Among the distinctive features of the interior decorations of a Spanish cathedral are the *retablo* and *reja*. The former, a reredos, erected behind the great altar, reaches immense dimensions, often occupying the full width of the nave and rising as high as the vaulting, embellished with sculpture. This is apt to be grossly naturalistic and violently dramatic or sensational, representing colossal figures, sprawling amid marble clouds and sunrays of gilded metal. Far more beautiful are the *rejas* or lofty grill-screens, upon which the skill of Moorish metal-workers or the skill derived from their traditions, is lavished with extraordinary fertility of design; a special device being the enrichment of the vertical bars by the insertion of canopied figures.

CHAPTER VI

GOTHIC ARCHITECTURE IN ITALY

We have already noted that the rib-vault, which made possible the development of Gothic architecture in the Ile de France, originated in Lombardy. But the Italian builders used the rib solely as a structural convenience, not recognising either its further structural or its æsthetic possibilities. Accordingly, when the Gothic style appeared in Italy, it was imported thither by northern, usually German, architects.

General Character.—Nor did the style, as employed in Italy, preserve the grandeur or purity of the northern type. The sunny climate did not invite the large openings that had become a distinction of the true Gothic. The windows were small, with little tracery, while the walls, being in consequence more solid, did not need the same enforcement with buttresses. Structurally, therefore, the walls are uninteresting, and are regarded as surfaces to be made attractive by applied decoration. Further, the Italian builder was everywhere influenced by the classic tradition. He clung to the round arch, even while he employed the pointed; frequently resorted to the Roman acanthus and Corinthian capital as decorative features; felt his columns as columns rather than as piers logically connected by the shafting to the vaulting, and in the vaulting confined his design to the main ribs, instead of enriching it with minor ones. In fact, he used the style without the structural logic and adventurous



SIENA CATHEDRAL

NOTE HALF COLUMNS ATTACHED TO THE PIERS. SEXAGONAL DOME OVER THE CROSSING; PULPIT BY THE PISANI—MARBLE PAVEMENT WITH GRAFFITO DESIGNS

MARBLE FAÇADE OF SAN MINIATO, FLORENCE

CATHEDRAL OF FLORENCE AND CAMPANILE

Behind the Latter Shows the Baptistry. Pp. 311, 312, 342

DOGE'S PALACE, VENICE

P. 315

WEST FAÇADE ORVIETO CATHEDRAL

Marble Veneer, Mosaics and Sculpture First Superb Polychrome Decoration. P. 311

SIENA CATHEDRAL, CAMPANILE ATTACHED

Façade Red, Black and White Marble, Rich Sculptures, Mosaics Modern. P. 311

MILAN CATHEDRAL

NOTE HOW THE FAÇADE SUGGESTS THE GERMAN USE OF INCLUDING NAVE AND AISLES UNDER A SINGLE HIGH-PITCHED ROOF. P. 313

INTERIOR OF MILAN CATHEDRAL

enthusiasm of the truly Gothic architect. He treated the edifice as a shell to be enriched with decoration.

In the interior, the walls and vaultings offered surfaces for painting. When this was accomplished as, for example, in the frescoes by Cimabue, Giotto, and others in the **Church of S. Francis** in **Assisi**, by Giotto in the **Arena Chapel, Padua**, and the chapels of the **Perozzi** and **Bardi** in **S. Croce, Florence**, and in **S. Maria Novella**, possibly by Taddeo Gaddi, or at any rate by some painter of the school of Giotto, the effect is incomparably resplendent. Where, however, as in the **Cathedral of Florence**, frescoes are missing, the appearance is cold and barren; redeemed somewhat, it is true, in this case by the colossal dimensions and sense of spaciousness.

For the exteriors reliance was placed upon applied embellishments. The side walls, for example, of **Florence** are veneered with marble; those of **Siena** and **Orvieto** with horizontal stripes of black and white masonry. But this colour decoration is a poor substitute for the structural enrichments, the traceried windows, flying buttresses, and mounting roofs of the true Gothic.

The Italians concentrated chief ornateness on the west façade; the most celebrated examples being those of **Siena** (1243–1284) and **Orvieto** (1290). They present elaborate compositions of vari-coloured marble, charmingly diversified, nicely balanced, sumptuously elegant and graceful. But compare, for example, Siena with, say, Rheims or Amiens, and how it sinks into insignificance!

In the French examples the pointed door-arches start an upward movement which is continued to the top in the organic relations of the parts to one another and to the interior arrangement. But in the Siena façade, the

round arches hold the eye down; for their feeling is not repeated in the upper part, which, notwithstanding the gables, turrets, finials, and culminating gable, has no suggestion of growth-up, but is rather a geometric design of curves and triangles, horizontals and verticals, carried up to a height. It is not organically structural; it is a built-up pattern. The designer was a sculptor—Giovanni Pisano.

Campanile.—The campanile is usually attached to the building. In place of string courses and mouldings are alternate courses of black and white masonry; the sole contrast being supplied by the rectangular window openings, which, possibly to offset the diminishing effect of perspective, increase in number upwards. The low spire is typically Italian Romanesque.

Fine examples of the period are to be found in Verona, Mantua, and Pistoia, while the most beautiful is that of **Florence,** designed and begun by Giotto and completed after his death by Andrea Pisano. It is distinguished from other bell-towers of the Italian Gothic by the projections which mark its four stories and the bold cornice with machicolated ornament. The surface is further varied with geometric designs, composed of coloured marbles; while the windows are embellished with tracery of an elementary design, corresponding to that of the adjoining Cathedral windows. The sides of the lowest story, broken only by a small light, are enriched with statues and bas-reliefs, some of which were designed by Giotto and executed partly by him and partly by Andrea Pisano, others being added later by Luca della Robbia. In character of subjects they correspond to the selections at Amiens from the Encyclopædia of Vincent of Beauvais. Ruskin says of this building that it is the only one

in the world, so far as he knows, in which the characteristics of Power and Beauty exist "in their highest possible relative degrees." But power is a term that connotes varied qualities to different minds; and still more different to various temperaments and experiences is the term beauty. Perhaps if he had said that it combined strength and grace, or stability and tenderness, it would be easier to appreciate his judgment. For Giotto's Campanile has an exquisiteness allied to dignity which is characteristic of Italian Gothic at its best, yet to the taste of many will ill compare with the vigour of the French and English styles.

Suggestive of the persistence of the Romanesque style during the Gothic period the most notable instance is the **Certosa**, or Church of the Carthusian Order, in **Pavia.** The façade and lantern over the crossing are Renaissance additions; otherwise this splendid edifice, constructed of brick and terra-cotta, is, except for the Gothic refinement of the rib-vaulting, purely Romanesque. A gift to the monastery by Duke Gian Galeazzo Visconti, it was begun in 1396, nine years after this patron of art and letters had begun to build **Milan Cathedral,** the most important example in Italy of the Gothic style.

Yet **Milan** involves peculiarities that may be due to the dissensions of the Italian architects with the German and French who were called in at various times to collaborate in the work. So strong a German influence is perceptible in both the character and details, that the main design has been attributed to Heinrich of Grund. Constructed entirely of white marble, the exterior is distinguished not so much by structural grandeur as by decorative richness. The windows, said to be the largest in any Gothic Cathedral, have intricate and lace-like

tracery; the walls are panelled with vertical string courses; the buttresses embellished with canopied niches, holding statues; lace-like again is the enrichment of the parapets of the roofs, while from them rises a forest of spiring finials, surmounted by the marble spire which was designed in 1440 by Brunelleschi.

And in the interior, also, organic relation is sacrificed to imposing display and delight in embellishment. The dominating feature is the avenue of nave columns, nine on each side. They are 12 feet in diameter, over 100 feet high, and crowned above their capitals with a cluster of canopied niches, containing statues—a German feature. The columns isolate themselves in the design; count only as an avenue of columns, while their immense size dwarfs the height of the vaulting, the more so that the height of the side aisles made a triforium impossible, and reduced the clerestory to insignificant proportions, with mean small windows. And the impression of squatness in the vaulting is increased by the rupture which the canopied niches make between the pier shafts and vault ribs. Upward growth is arrested; organic relation violated by a merely decorative intrusion. To realise fully the diminution of structural impressiveness thereby produced, one may compare the Milan interior with that of Amiens or St. Ouen in Rouen.

Secular Gothic.—It was in their secular architecture that the Italians used the Gothic with the greatest freedom. The official buildings of this period, when the government of the cities and communes still preserved a popular form, comprised the city hall or *podesta* and the council hall, which was variously known as the *palazzo publico, palazzo communale* or *palazzo del consiglio.*

The most important example of a podesta is the

Palazzo Vecchio in **Florence**, which was designed, 1298, by Arnolfo di Cambio, the first architect of the Cathedral. We shall study it later in comparison with the beginnings of the Renaissance (p. 358). Opposite to it stands the **Loggia dei Lanzi**, an example of the open-air tribunes erected for popular ceremonies. Built in 1376 by the architects Benci di Cione and Simone di Talenti, its design is rather Romanesque than Gothic. Its name is derived from the fact that it was used as a guard house by the German spearmen of Cosimo I, after he had usurped the government of Florence and established his residence in the Palazzo Vecchio.

The finest examples of Gothic domestic architecture are to be found in the northern cities, **Florence**, **Pisa**, **Siena**, **Bologna**, and particularly in **Venice**, where the immunity from social disorder and outside attack, combined with commercial prosperity, encouraged a more luxurious mode of living. We shall refer to the **Ca d'Oro** as a type of the Gothic Venetian palace of a merchant prince, in the chapter on the Early Renaissance (p. 360). Here let us study the **Ducal** or **Doge's Palace**, which adjoins St. Mark's, the two buildings, one civil and the other religious, representing in visible union, the mind and the soul of Venice.

Doge's Palace.—Instead of preserving the suggestion of a mediæval fortress as the Palazzo Vecchio does, the centre of Venetian authority is a palace, designed to represent the grandeur of the city's destiny and to provide a setting for sumptuous civil functions and the ceremonial entertainment of ambassadors and other distinguished guests. The building, since it was founded in 800, thirty years before the founding of St. Mark's, has undergone many vicissitudes; five times destroyed by fire and on

each occasion rebuilt with greater magnificence, so that the present design is a composite of Gothic and Renaissance.

The Gothic is chiefly represented in the magnificent loggia, which comprises two open arcades, ranging along two fronts, facing, respectively, the Piazzetta and the Lagune. The lower arcade consists of pointed arches, resting on circular columns, the shafts of which are of stumpy proportions and rise directly from the pavement without bases. The capitals, carved with foliage, figures, and animals, combine to an unusual degree richness of design with delicacy of execution, while that of the corner column, which is surmounted by a group of Adam and Eve, is described by Ruskin in his "Stones of Venice" as being, in respect of workmanship and the grouping of the foliage, the finest he knows in Europe. The upper arcade is composed of twice the number of columns, which again have circular shafts without bases, but are proportionately taller and more graceful. They support trefoiled arches, whose ogee curves slide up into a series of circles pierced with quatrefoils—a combination of tracery characteristically Venetian; as indeed, is the mingled massiveness and elegance of the whole design.

This double arcade must have presented a still finer effect in the original design when it stood clear of the main façade. For the advancing of the upper part to the arcade line, which dates from a restoration after a fire in the fifteenth century, produces an effect of top-heaviness. Moreover, its direct juxtaposition with the elaborateness of the arcade accentuates the contrast, presented by the severe simplicity of the surface, patterned with red, white, and black marbles, and meagrely pierced with windows.

BOOK VI

THE RENAISSANCE PERIOD

CHAPTER I

RENAISSANCE CIVILISATION

In the early years of the fourteenth century a new spirit became manifest in art. It showed itself, for example, in the sculpture that embellishes Amiens and Chartres, in the bronze doors of the Baptistry of Florence by Andrea Pisano, and in the painting and sculpture of Giotto. It is supremely manifested in the poetry of Dante.

All of these works belong to the Gothic period. The soul in them is still composed of the faith and knowledge of the Mediæval mind and imagination; but the form in which the soul is enshrined has become less generalised, abstract, and symbolical; it has become more individualised, concrete, naturalistic. In a word, it has become more humanised.

It represents a change of attitude toward life; a disposition to regard the world, no longer exclusively or chiefly in relation to a future existence, but as the scene of human endeavour, human aspirations, human emotions. It represents a renewed consciousness on the part of Man of his own Humanity. In a word, the thought of the world was gradually evolving from the scholastic attitude of the Middle Ages to the *Humanistic* spirit, which was the breath of life of the Renaissance.

At first the movement groped. The thinker and the artist, while intent upon the study of life, were ignorant of exact methods of study. These were gradually learned through the rediscovery of the Greek and Roman classics. The Rebirth, in fact, which is metaphorically suggested

in the term Renaissance, was the result of the spread of the humanistic spirit and the "Revival of Learning"; and, in recognition of this, Classic literature was called "Litteræ Humaniores," the students of the Classics were called Humanists, and Humanism is the term often applied to the whole movement.

The movement was one that affected the whole fabric of civilisation, for it involved no less than the self-emancipation of the human intellect and will. The human will began to free itself from the shackles of dogmatism and the domination of absolute authority, whether exercised by the Church or by civil rulers. The human intellect gradually freed itself from the subtleties and sophistries of the "Schoolmen," ceased to speculate on abstract questions, such as the language spoken by the angels, and how many angelic beings could be supported on the point of a pin, and began to apply itself to the exact study of what was actually within the reach of human experience or research. And for this exactness of study the Revival of Learning laid the foundation, because the students of the Classics learned to collate the various manuscripts, comparing them critically so as to discover the correct reading, and were also obliged to compile grammars and dictionaries—in fact, to construct from the ground up, a fabric of reliable knowledge and at the same time a system of education. It was a process that encouraged both exact and critical research.

Meanwhile, before the Revival of Learning could make itself a force, there had been other influences which prepared the way for emancipation from the despotism of authority. The Middle Ages had been dominated by two authorities, the Church and the Holy Roman Empire. The former, as we have seen in a previous chapter, was

the sole agency to introduce organisation into the chaos that succeeded the fall of the Roman Empire. It gradually subdued the barbarian conquerors not only to a semblance of religious fellowship but also to some degree of social order, and further fostered the latter by throwing the weight of its influence on the side of popular rights.

On the other hand, the attempt of Charlemagne to revive the magnificence and the authority of a Roman Emperor had been directly to force upon the various racial divisions of Europe the yoke of a political despotism, under the sanction of the Church's co-operation. The Holy Roman Empire was an arbitrary and artificial union of unmixable elements and did not survive the death of its founder. The central authority could not hold in check the ambition and power of local authorities. The Frankish group fell apart from the Germanic groups across the Rhine. The authority of succeeding emperors was confined to the east of the Rhine and had to meet the growing opposition of the Feudal system. The result was a continual clash of authorities, in which all parties intrigued for the assistance of the Church, so that the Papal authority also was drawn into the struggle for civil power, thereby weakening its prestige in religious and social directions.

The outcome of the prolonged embroilment was the gradual consolidation of peoples into nationalities. France, England, and Germany emerged as separate unities, each drawn into a whole by racial similarities and local self-interest. The dream of a centralised and absolute authority, whether civil or religious, was slowly replaced by the practical policy of attempting to establish a balance of European powers.

And, while this gradual disintegration of the absolute-

ness of authority was in process, other circumstances operated to undermine the old traditional order. We have spoken of one of them—the spread of Humanism. Meanwhile the use in warfare of gunpowder and guns hastened the overthrow of the Feudal system. The introduction of the mariner's compass made possible the exploration of continents beyond the ocean. The substitution of the Copernican for the Ptolemaic system of astronomy revolutionised men's idea of the universe. Further, the growth in nationality was accompanied by the development of separate languages, and the diffusion of these, as well as of knowledge generally, was increased by the invention of paper and printing.

Thus, from diverse directions light was breaking into the darkness of life, dispersing the superstitions and terrors that had shackled the human will, and illuminating positive pathways for the human intellect to travel. Thought ceased to be involved in allegory; the study of nature to be "perverted into grotesque and pious parables," while sorcery and magic no longer seemed to be the means of compassing control over nature and obtaining insight into the mysteries surrounding human life. The other world, with its imagined heaven and hell, loosened its grip on the conscience, and the joys and possibilities of this world began to occupy men's minds. The beauty of the visible world and the delights of sense ceased to be regarded as snares of the devil, and in their growing independence and belief in themselves men turned to mastering the resources of this world and to making it better for the purpose of life. No wonder, that as the consciousness of this new and fuller existence became confirmed, men spoke to one another of a Rebirth!

How this movement, which was in ferment throughout

Western Europe, operated specifically in different countries, is now to be traced. The leadership in it was taken by the Rinascimento, to use the Italian word, of Italy.

ITALIAN RENAISSANCE

Ever since Charlemagne's conquest of Lombardy the Emperors had held a foot in Italy, contesting authority with the Pope. Meanwhile, the successors of Roger, the Norman conqueror of Sicily, held sway over the Kingdom of Naples, which occupied the southern part of the peninsula, and at different times was joined to or independent of the Kingdom of Sicily. Italy, in fact, had proved herself incapable of forming a united nation or of establishing a national state. Like Hellas of old, she was an agglomeration of communes and cities, capable of being inspired by a common sentiment of race, but unable to merge their independence and mutual jealousies and rivalries in a single political organisation. Even the individual communes and cities were split into factions: the Ghibellines, representing the aristocratic party, favouring the Emperor, and the Guelphs, who comprised the popular party and were assisted by the Popes.

The result of these conditions was to quicken the growth of local feeling. Patriotism was replaced by intense civic pride, which centred in the city or commune and made it vie with others in self-development. And this self-centering resulted, firstly, in each nucleus of energy developing an independent type of community and, secondly, in bringing to the surface the personal force of individual citizens. The Duke who had been elevated to or usurped the headship of the community, was compelled to maintain his position by force of character and by acts that would redound to the pride and power of

the community. He needed the assistance of other men of parts and employed their services, no matter from what class of the community they had sprung. There was room higher up for every citizen who could contribute something to the community's power and dignity. As one result of these conditions there sprang into existence a class of professional soldiers, or condottieri, who sold their services and those of their trained bands to the highest bidder, and who, when occasion offered, lifted themselves, as in the case of Colleoni and Gattamelata, to high military commands. Moreover, the perpetual intriguing that the conditions of politics had developed between cities and rival authorities, encouraged the employment of a large body of secretaries and diplomatic go-betweens, men of education and superior sharpness of wit. In fact, any one who by his brains or his handiwork could furnish eminent service to the community was eagerly sought after and promoted. Such men were held in high esteem and regarded as an honour to the community.

In an environment such as this it followed that the Italian Rinascimento was the product of men of powerful individuality and that the trend of it led to the exaltation of individualism. The first great personality associated with it is that of Petrarch.

Son of a man who had shared Dante's exile, he himself emulated the poet of Beatrice in *canzoniere,* composed to his ideal mistress, Laura. He too helped to refine and vivify, as Boccaccio did a little later, the Italian tongue; but he was filled with the pride of being a descendant of the Roman People, and looked back to Latin literature as the worthiest object of his study. In his zeal for collecting and collating manuscripts and through the richness of his imagination and critical judgment, joined to a

tireless devotion, he became the pioneer in that Italian scholarship which restored to Western Europe the knowledge of the Classics and laid the foundation of modern thought.

For hitherto, although an acquaintance with Latin had survived, it was chiefly in the monkish form, and the Latin authors were known only by fragments, often mutilated in the process of copying. The knowledge of the Greek tongue, while preserved in Byzantium, had all but entirely disappeared from Western Europe, and Petrarch, realising the need of recovering it, urged Boccaccio to begin the work. Accordingly the latter took lessons of an adventurer, named Leone Pilato, a native of Calabria who had resided in Thessaly, and succeeded also in having him appointed professor of Greek language and literature in the University of Florence. Boccaccio, like his friend Petrarch, was indefatigable in the search for manuscripts among the libraries and, as often, the lumber-rooms of the monasteries. And frequently he had to mourn their mutilation, as on one occasion when he found the precious sheets of vellum had been scraped clean of the classic text and inscribed with psalms for the use of the choirboys, while the decorated margins had been cut into bits and sold to women as amulets.

During the fifteenth century the pursuit of scholarship continued, receiving a great advancement when Constantinople, in 1451, was conquered by the Turks. For many of the Greek scholars found refuge in Italy, where they were received with the highest enthusiasm in universities and the palaces of princes. Thus for a century the keenest spirits of what was then the most intellectually advanced people of Europe, devoted themselves to classical erudition. The world's debt to them is incalculable, but

the boon they conferred on others was not without detriment to themselves. Preoccupation with scholarship produced a certain affectation and pedantry of mind; led to an extravagant valuation of the antique over everything modern and undermined Christianity with Paganism. Nor was it the Stoic side of Paganism that was emulated. The pleasures of life were pursued as an ideal, and with no moral curb on conduct; freedom was confused with license and the desire of the senses ousted the restraint of law. The organisation alike of the Church and of society in time became honeycombed with corruption.

In such an intellectual and moral atmosphere the ego in man was worshipped as divinity. Individualism, extolled to a fetish and unbridled by any considerations of good and bad, engendered faculties of glorious capabilities and also of monstrous depravity. Individualism, in fact, ran its hot and heady course at the expense of everything that had once counted for strength in communal and civic spirit. By the beginning of the sixteenth century, the culmination of the Renaissance, a few giants survived, but the Italian people, while intellectually in the ascendant, had degenerated physically and morally and fell an easy prey to foreign aggression.

The expedition which Charles VIII made to Naples in 1494 brought the French into Italy. They were soon followed by the Spaniards, until Italy became the cockpit of European rivalries. Political as well as moral degradation was reached when, by the League of Cambrai, 1508, Pope Julius II made alliance with Louis XII of France, the Emperor Maximilian, and Ferdinand "The Catholic" of Spain for the partition of the Venetian territories. Humiliation ensued sixteen years later,

when German and Spanish mercenaries, led by the renegade Constable Bourbon, sacked Rome. Italy, after having led the van in the emancipation of human intellect and will, had prostituted both. Even the Counter-Reformation, instituted by the Church to reform her own abuses as well as to resist the tide of Protestantism, could not save Italy to the Italians. Three hundred and fifty years had to elapse before they could recover their nationality and once more set themselves upon the road of progress.

GERMAN RENAISSANCE

The influence of the Italian Renaissance was firstly and most directly absorbed by France. But the consideration of this may conveniently be postponed until after a review of its operation in Germany and Spain. For in both these countries the Renaissance influence bred antagonisms: in Germany the Reformation and in Spain the Counter-Reformation.

The Renaissance which the Italians had initiated as a thing of Beauty, began to operate in Germany as a thing of Power; the emancipation of the human intellect and will was supplemented by the emancipation of the human conscience. The Italian indifference to the latter was more than a source of decadence to themselves; for it cleft into two channels what should have been united in a single stream of human endeavour; it forged barriers between what should be component elements in human ideals. It started that antagonism between Beauty and Morality, between Æsthetics and Ethics by which even to this day civilisation is being retarded in its richest and most beneficent possibilities of progress.

Germany was quick to absorb Italian erudition. Hebrew, Greek, and Latin scholars, rivalling those of Italy,

became numerous in German universities and in the free cities of Nüremburg, Augsburg, Basel, and Strassburg. But even students who attended the universities of Italy escaped the Pagan influence. They returned to a homeland which was not strewn with classic remains, and whose traditions were still deeply rooted in mediævalism and expressed in the Gothic spirit. It was the same with the artists. For example, the art of Schongauer, Dürer, Holbein, and Cranach is untouched by that sense of beauty which their Italian contemporaries had evolved from classic influence. Moreover, the German mind was more penetrating, earnest, argumentative than the Italian, more occupied with substantial than with abstract problems. The German temperament also was more combative; incapable of the Italian cynical toleration and at once deeper and narrower in its character.

Consequently the German erudition began to apply itself to concrete problems, such as theological criticism and the absolute authority claimed by the Church. The Bible was opened up to the Germans as a new book. As the Classics had served to emancipate the Italian intellect and will, so the Bible emancipated the German conscience. "The touch of the new spirit which in Italy had evolved literature, art, and culture, sufficed in Germany to recreate Christianity." The sale of Indulgences by Leo X and Luther's protest but served to set the spark to the explosion, which, long in preparation, split Teutonic and Latin Christianity, and involved Western Europe for two centuries in politico-religious strife.

For gradually it had become recognised that the new "heresy" threatened the authority alike of monarchical government and the Papacy. Orthodoxy and absolutism

were the two sides of the same shield. The Church had begun to realise that there was as much danger to its authority in the Pagan revival of the Italian Renaissance as in Protestantism. Both papal and imperial authority were threatened. Accordingly, Pope Clement VII and Emperor Charles V entered into a compact at Bologna in 1530, to maintain in its integrity the Catholic Faith. Thus began the Counter-Reformation, which reformed many of the abuses that had crept into the Church and renewed the fervour of the Catholic religion, but on the other hand, arrayed the forces of conservatism against the march of progress.

SPANISH RENAISSANCE

It was in Spain that the Counter-Reformation was most zealous. Although the influence of the Italian Renaissance had reached her, she had rejected its pagan aspects. On the one hand, her rulers jealously guarded their title of "Catholic Majesty." On the other hand, the released energies of the country had been largely directed to the commercial conquests, opened up by the discovery of America, which encouraged that self-reliance and absorption in self that were characteristic of the Spanish temperament. Spaniards had upheld the Faith in their long contest with the Saracen intruders and still considered themselves the Champions of Christendom. Meanwhile, the intellectual activity inspired by the Renaissance gave them renewed belief in themselves and established them in their interest in the affairs of their own life.

Typical alike of the Spanish race and of the effect upon it of the Renaissance is the "Don Quixote" of Cervantes, whom Symonds ranks with Ariosto, Rabelais,

and Shakespeare as the four supreme literary exponents of the Renaissance. For each of these caught the spirit of the Renaissance when it was at the first freshness of its vigour in their respective countries and, instead of using it to imitate the past, captured its imagination into the vernacular of his own language, making it a most flexible and vital medium for the expression of the spirit of his own time and country. In Cervantes' case the racial humour punctured with ridicule the affectations into which the old order of Chivalry had degenerated.

That the new attitude toward life which it indirectly advocated, failed to be realised by the Spaniards may be attributed to two causes. One is the Counter-Reformation which rallied the forces of reactionism and the other, the easily gotten wealth that poured into the country from the New World. The one, associated with Monarchical absolutism, destroyed political progress, while the other swamped initiative and the vigorous handling of life, resulting in both moral and economical decadence.

Yet the inherent raciness of the Spanish people could not be entirely suppressed. It declared itself especially in the prolific, versatile, truly national drama of Lope de Vega and Calderon, which pictured the life of the people with a variety and richness that have been surpassed only by Shakespeare. Moreover, after an apprenticeship of the Spanish painters to the works of Raphael and other Italians, the seventeenth century produced the greatest of all naturalistic painters in the person of Velasquez. Nevertheless, despite certain brilliant exceptions, it was the tragedy of Spain that at the moment, when her Renaissance was approaching fulfilment, it was strangled.

FRENCH RENAISSANCE

Very different was the part played by France. Her native genius had to some extent anticipated the spirit of Humanism, so she embraced the learning and culture of the Renaissance eagerly but with discrimination. She utilised both, not in the way of imitation, but as enrichment to her own self-expression; and, finally, as Italy declined, assumed the leadership of European culture.

Already in the twelfth century Abelard had initiated the spirit of free inquiry in theology; later, it was upon the love-songs of the *trouveres* or troubadours of Provence that Petrarch patterned his *canzoniere,* and from the *fabliaux,* popular in France, that Boccaccio derived the character and some of the themes of his Decameron.

While in the north France maintained close relations with Flanders, she was drawn into commercial relations with Italy, directly, in the south, and by way of the German cities and Burgundy on the east. Her political relations began, as we have noted, with the expedition of Charles VII to Naples, and were continued by the efforts of Louis XII and Francis I to secure and hold possessions in Italy. Even the latter's disastrous defeat at Pavia did not discourage him from subsequent warlike enterprises, but meanwhile his zeal for things Italian caused him to invite many Italian artists to Fontainebleau. Henri II's queen was Catherine de Medici and her children, Charles IX and Henri III, were brought up as Italianated Frenchmen.

Thus, during the sixteenth century the Court and nobility of France became largely Italianised in manners, although the survival of the Feudal system and the distinctly military character of the aristocracy rendered

France very different from Italy in many vital particulars. For France was engaged in developing her nationality and these disintegrating and aggressive elements had to be subdued to the central authority—a process made more complex by the spread of the Reformation under the leadership of Calvin, so that the struggle was one of conscience as well as political power. But in the process France was awakened to a real sense of nationalism. The Gallic spirit became aware of itself and intent upon development and consolidation.

Consequently, the presence of such artists as Leonardo da Vinci, Del Sarto, Primaticcio, and Benvenuto Cellini could not stifle the native art. They left their impress on the decorations of Fontainebleau and served as models of superior knowledge and refinement to French painters and sculptors, yet did no more than modify the French originality of inspiration. Painters like the Clouets and the unnamed painter of the "Diana" of the Louvre and the sculptors Goujon and Pilon, despite some debt to Italian influence, preserved unmistakably their Gallic spirit, as we shall also find did the architects of the French *châteaux.*

It was the spirit that had created the miracles of Gothic architecture; a spirit highly adventurous, yet logical, which overflowed with enthusiasm for life, but was controlled by instinctive taste.

It suffered a clipping of its freedom when France was finally consolidated as a State and Absolutism was enthroned in the person of Louis XIV. Under the officialdom that he established French art was compelled to sit at the feet of the Italians. Yet, even so, the native genius shines through acquired affectations in the work of Poussin and Claude, while the eighteenth century wit-

nessed the reblossoming of the Gallic spirit in the dainty fancies of Rococo decoration. On the other hand, the sterner issues of the Renaissance, as they affected political liberty, culminated after long delay in the Revolution.

That the Gallic genius has been and still remains a powerful factor in the progress of civilisation is due to its blend of the intellectual and the æsthetic faculties. It thinks clearly and feels subtly and adjusts thought and feeling into an admirable accord by its tact of taste. It approximates most closely to the quality of the old Greek genius. At its best, under the impulse of a high spiritual purpose, it has expressed itself in terms of Truth and Beauty that no modern nation has rivalled. Even when its motive has been trivial, its manner of expression has redeemed it from insignificance, the craftsmanship being in itself so true and beautiful. Moreover, the French spirit is so agile and responsive, that it has caught and reflected back the diverse thought and feeling of other countries, and, further, has so marked a strain of originality that it has preserved the faculty of creativeness.

NETHERLANDISH RENAISSANCE

The Netherlands, through their commercial intercourse with Italy, early came in touch with the Renaissance. But the self-reliance of the people was such that the earliest influence only improved their own way of expressing their racial consciousness. For example, the town halls in which the pride of their cities was enshrined, owed nothing to Italy except some later refinements of decoration. The painting of the Van Eycks was not only different from but technically superior to

the contemporary art of Italy and furnished the latter with the practical processes of the oil medium. In time the mannerisms of Italian painting made themselves felt in the work of Van Orley and others, but the genuine reaction of the Flemish genius to the Italian Renaissance did not develop until the seventeenth century, when it produced a reinvigorated expression of itself in the genius of Rubens.

Political and religious causes, due to the grip of the Spanish rule, had retarded the progress of the Flemish provinces, while, on the other hand, it was the break away from this absolutism that started the northern provinces of Holland on their Renaissance. The Holland Renaissance of the seventeenth century, which moved step by step with their struggle for political and religious liberty and their consolidation into a united nation, represented a most remarkable blend of Humanism and Revival of Learning. It was unique at its time and has preserved its significance, because both these engines of activity were devoted deliberately to national and individual betterment. The Dutch zest of life stimulated them not only to obtain their liberty, but also to improve in a multitude of practical ways the conditions of living. It caused them to organise industry and commerce, to cultivate their land intensively and to extend their explorations and trade over the seven seas. Nor were the intellectual resources overlooked. The university of Leyden became a great centre of human culture and its scholars and scientists set the course of thought and research in the direction of modern life.

Holland's prosperity, however, proved her undoing. After defying and withstanding the absolutism of Spain, she fell a victim to that of Louis XIV. And less by di-

rect conquest than by the insidious sapping of French influences. She became inflated with the ambition of being a world-power, while her citizens emulated the fashions of French society. Losing at the same time political liberty and intellectual and artistic initiative and independence, she followed the human sheep-trail that led southward over the Alps and for more than a century became a clumsy imitator of the past art of Italy.

ENGLISH RENAISSANCE

England's insular position tended to delay her reception of the New Spirit. When at length it reached her it came simultaneously in the form of Italian influence and of the Reformation. Yet both had been anticipated a century earlier; the Reformation in the teaching of Wycliffe, the Renaissance in the poetry of Chaucer. But the harvest of the new spirit had been deferred by the French wars, the Wars of the Roses, and the persecution of the Lollards, so that it was not until 1536, when the King, Lords, and Commons by the Act of Supremacy established the Reformed Faith as the State Religion, that England entered definitely, says Symonds, on a career of intellectual activity abreast with the foremost nations of the Continent.

By this time the latter had accomplished the work of collating and printing the classic authors and had produced a varied mass of literature in the modern languages; all of which became food for the omnivorous appetite of the English. Assimilation, at first, was slow and retarded by imitation. Wyatt and Surrey, for example, grafted the graces of Italian poetry onto the native stock, introducing the forms of the sonnet and blank

verse; Sidney experimented with the classic metres, while tragedies in the style of Seneca, rivalled the similarly pedantic imitations of Italian and French dramatists. Gradually, however, the vigour of English digestion accomplished a complete assimilation.

England, through her sympathy with Holland, had found herself involved in the conflict of the Counter-Reformation. She broke the rival power of Spain by the destruction of the Armada, and through the buccaneering exploits of Raleigh, Drake, Frobisher, and Hawkins opened up the beginnings of colonial expansion. She leaped at a bound into consciousness of nationality and in the glow of her enthusiasm discovered her own capacity of originality.

Shakespeare is at once the crown and symbol of the English Renaissance. He drew the material of his plots from a variety of foreign sources, but creatively impressed upon his plays either a new and a universal significance or unmistakably the English spirit of his day. Meanwhile, Spenser, while deriving his allegory from the Middle Ages and decorative richness from the Italian Renaissance, added thereto a sweetness, purity, and splendour of imagination peculiarly English. And by the side of Spenser and Shakespeare, as representative of the creative imagination of the English Renaissance, must be set Bacon, the expositor of the modern scientific method.

This flowering of the English Renaissance, in which intellectual brilliance walked hand in hand with beauty, was rudely interrupted, firstly, when the spirit of the Counter-Reformation was revived by James I and Charles I; secondly, by the resultant Puritan reaction, and the equally resultant license of the Restoration. A

cleavage between morals and beauty was opened up that to this day has not been bridged. On the other hand, the spirit, let loose by the Renaissance and the Reformation, pushed forward persistently on the path of political liberty, and England's mightiest contribution to the civilisation of the world has been the realisation, however imperfect, of the ideal of human freedom. Meanwhile, in the realm of the arts, it is in the province of Literature, rather than in those of the Fine Arts, that her Renaissance has reaped its most abundant harvest.

CHAPTER II

RENAISSANCE ARCHITECTURE IN ITALY

The foregoing summary of Renaissance culture anticipates three marked characteristics of the architecture which responded to it.

Renaissance architecture was developed from the study of classical antiquities and, to some extent, of classic literature. It was adapted to conditions of society which became increasingly elegant and luxurious. It was created, no longer by gilds of craftsmen, but by individual designers, whose names are recorded and identified with their respective works.

We are also prepared to find that as the study of classic examples lost the freshness of its early inspiration, it led to a growing formalism in the use of the classic details; and that, as the temper of the time declined in taste and grew in grossness, the architectural style reflected the decadence in increasing pretentiousness and extravagance of forms.

The Renaissance proper, in so far as the term Newbirth is justified, occupies the fifteenth century, the period called by the Italians the Quattrocento. To the first half of the sixteenth century, the Cinquecento, belongs the more formally classic style, after which appeared the decline of the latter half of the century, known as the Baroque style, followed during the seventeenth century by the further degeneration into the Rococo.

PAZZI CHAPEL

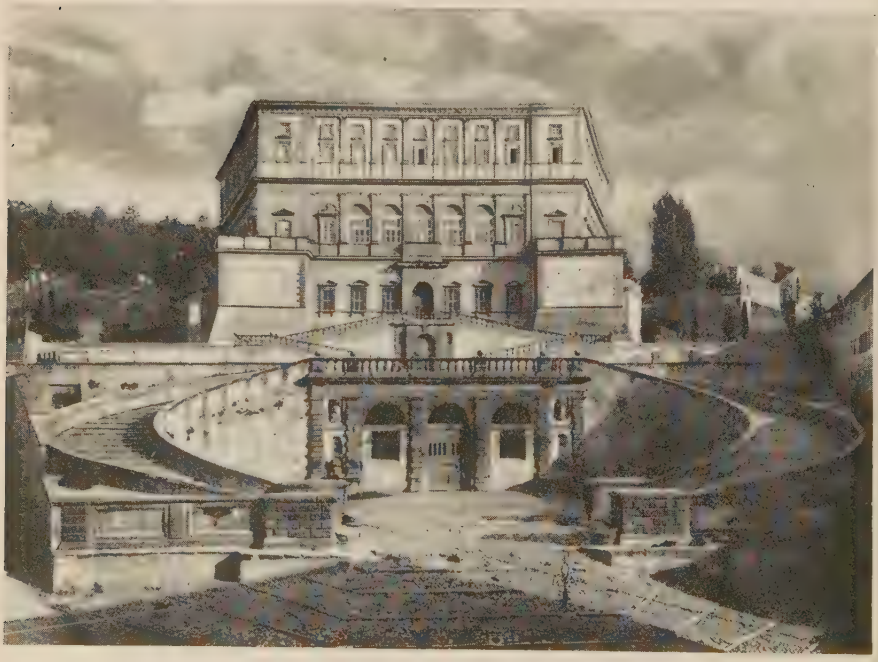
By Brunelleschi: in S. Croce, Florence. P. 343

SANTA MARIA NOVELLA, FLORENCE

By Alberti. Earliest Example of Flaring Consoles. P. 345

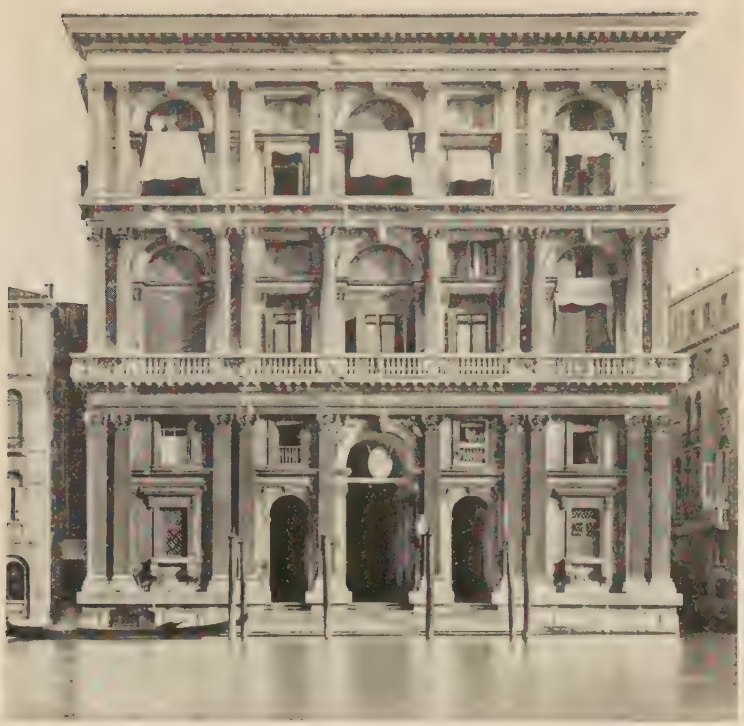
STROZZI PALACE, FLORENCE

By Cronaca. A Fortress Type of City Residence. P. 345



CAPRAROLA PALACE

By Vignola. Example of Country Villa. P. 348

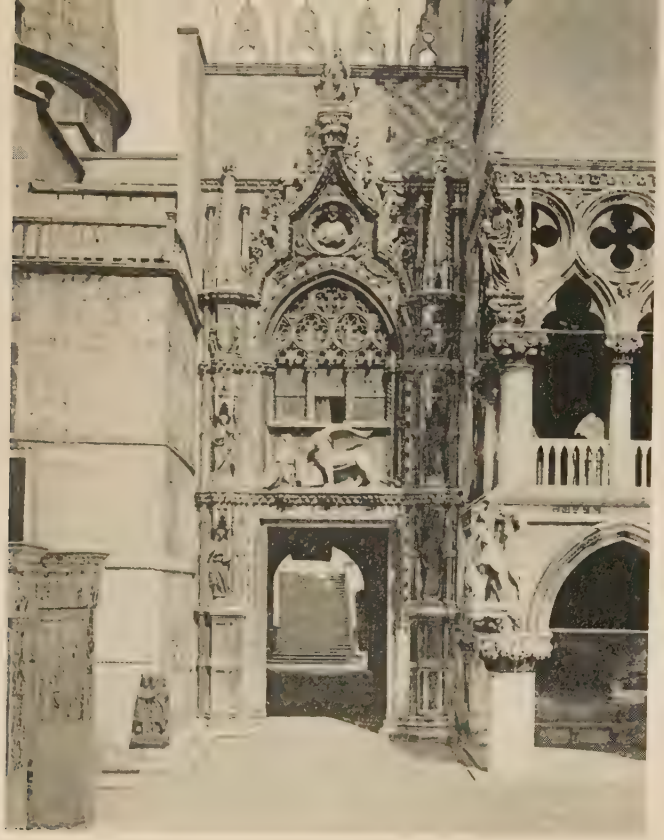


GVIMANE PALACE, VENICE

By Sammichele. P. 355

BASILICA VICENZA

By Palladio. Two-Storied Classical Arcades Surrounding the Old Gothic Edifice. P. 351



DOGE'S PALACE, VENICE

RENAISSANCE PORTAL ADJOINING THE GOTHIC ARCADES. BY GIOV. AND BART. BUON. P. 353

S. MARIA DELLA SALUTE, VENICE

BY BALDASSARE LONGHENA. P. 356

The decline of taste may have been hastened by the fact that Renaissance architecture involved no new principles of construction. It was essentially a product of adaptation, and with less consideration for structural problems than for external appearances. There was a change in the status of the architect: he ceased to be preeminently the master-builder; he became a designer, specifically interested in what one may perhaps call, the pictorial aspects of his building. He was occupied with the composition of his façade, as a painter is with the composition of his picture. He designed it on paper, as an organised arrangement of lines, masses, details, and patterning of light and shade. The days of working out the structural problems in the course of construction and of employing the co-operation of skilled craftsmen, to create the details of decoration had ceased with the passing of the mason-gilds. In their place were workmen, who followed implicitly the drawings of the designer.

And the latter, as was characteristic of the time, had become an individualist, stamping his design with the impress of his own personality. It was revealed not only in the larger elements of the composition but also in the exquisiteness of detailed decorations. Nor was the actual creativeness, involved in this tireless pursuit of the refinements of beauty, confined to the externals of buildings; it was expended with prolific invention on the interior fittings. Thus, churches and palaces alike became museums, enshrining endless objects of beautiful craftsmanship in metal-work, marble, terra-cotta, ivory, and textiles, as well as the mural decorations of the painter.

Museums, however, it is to be noted, which were not, as in our own day, huge storehouses of objects, separated from their original environment and use, but treas-

ure houses of beautiful things that formed part of the habitual life of the people, palaces for those of high degree, churches and town halls for all classes of the community. We cannot enter into the spirit of the Renaissance unless we realise that to all classes of the Italians of the period beauty was a familiar and living element in their lives.

Classic Influences.—The influence of the classic remains began to be apparent in the sculpture of Nicolas Pisano, who died in 1278. It continued in the work of his son and became more marked in that of the latter's pupil, Andrea Pisano. There are distinct traces of it in Giotto's painting, especially in the details of the buildings, which are evidently rude imitations of Roman antiquities. That they are rude is fortunate, a proof that imitation of the past was not Giotto's chief concern. Indeed, the vital thing in Giotto, which made him the leader of a new school of painting, was his effort to bring the arts into closer touch with human nature. It was his pursuit of natural representation and expression which caused him to be a leader in an age that was rediscovering an enthusiasm for human nature; and in this respect he set the main course for the whole of the fifteenth century. The trend of Quattrocento painting and sculpture was to relearn the principles of correct drawing and perspective and to use the growing knowledge and skill for the expression of subjects that, while they were suggested both by the Christian religion and the classic mythology, were informed with the naïve freshness and independence of the expanding Italian spirit.

A corresponding freedom from subservience to antique forms and a truly creative adaptiveness characterised the architecture of the period. It was during the

Quattrocento that what is most original in Renaissance architecture was achieved, and the old methods of construction and old details of decoration were successfully applied to the new problems imposed by changed conditions of living and habits of thought. It is by the actual creativeness with which the readjustment was accomplished, as well as by the discretion and refinement of taste, exhibited in the whole and every part of the design, that the architecture of this period is distinguished.

The qualities which it exhibits are a direct reflection of the influence of the classic literary revival. The latter encouraged mental qualities of logic and orderliness and an appreciation for beauty that was characterised by precise taste and exacting refinement. And, just as Petrarch, Boccaccio, and Ariosto on their foundation of classic learning built the beginnings of a literature in the native tongue—the first natural expression of the Italian genius, liberated by the study of antiquity to new ideals of their own modern life—so it was with the artists. Having graduated from the school of the past, they applied what they had learned to meeting the needs and conditions of their own day.

Perfection of Detail.—Again, just as Petrarch and Boccaccio and their followers in literature devoted themselves to perfection of expression, so the architects of the Renaissance were distinguished by the exquisiteness of the details they introduced into their designs. They were, in the first analysis, individualists, so that the great ones—and they were numerous—created individual styles. But, further, they brought the keenness of their Italian intellect and the consummate refinement of their taste to the disposition and actual execution of the details. It has been said—and one may believe the truth

of it—that "the layman is not capable of appreciating the refinements and the clearness of their mouldings, and the vigour and strength their virile natures put into their silhouettes."

Individualism being the characteristic of the Italian architects of the Renaissance, we will enumerate the most important personalities.

PRINCIPAL ARCHITECTS OF THE FLORENTINE SCHOOL

Brunelleschi.—Among the first of these deliberate students of antiquity was the architect Brunelleschi. He was born in Florence in 1379 and displayed early a talent for mechanical construction. Accordingly his father apprenticed him to the Gild of Goldsmiths. He quickly became a skilled workman and acquired a knowledge of sculpture, perspective, and geometry. During a visit of some five years to Rome, the chief repository of classic remains, he made a profound study of architectural construction, especially as illustrated in the dome of the Pantheon, the vaulted chambers of the baths, and the use of successive orders of columns in the exterior of the Colosseum.

Returning to Florence, he entered into deliberation with the city council to erect the **Dome of the Cathedral.** It crowns, like his Milan cathedral dome, an octagonal plan. A design for it, which is pictured in a fresco in the Spanish Chapel of the Church of Santa Maria Novella, had already been prepared by Arnolfo di Cambio, the first architect of the cathedral and the designer of the Palazzo Vecchio. Brunelleschi deviated from it by raising the dome upon an octagonal drum, pierced with circular windows, thereby securing the impressiveness of additional height, while preserving the lightness of ef-

fect. He undertook to erect the dome without the great expense of timber centerings, and accomplished the feat, it is said, by placing voussoirs one above another with horizontal joints.

The dome is composed of an inner and an outer shell of brickwork, reinforced by eight main and eight intermediate ribs. It is 138 feet wide, with a height from the spring of the drum to the eye of the dome of 135 feet. The lantern was added after Brunelleschi's death, from the design he had prepared. This dome is not only a monument to the genius of its creator, but scarcely rivalled in beauty by any other work of the Renaissance. That of St. Peter's may be a prouder and more imposing structure, but it is more sophisticated in its use of classic details lacking the grand simplicity of Brunelleschi's—the natural nobility, if one may say so, of a thing that has grown to life. It may be less stately, but is more companionable; less imposing, but more intimately inspiring. The contrast between the two domes reveals in a remarkable way the difference between the dawn of the Renaissance and its high noon.

Brunelleschi's churches in **Florence** include **S. Lorenzo** and **S. Spirito**, both of which are on a basilican plan, with elevations that involve modifications of Roman construction. The former is barrel vaulted in the Roman manner, but the nave ceiling of S. Spirito is of wood and flat. The dome of the latter is erected upon *pendentives* which henceforth were employed on all Renaissance domes. Brunelleschi's choicest ecclesiastical design, however, is the **Pazzi Chapel** in **S. Croce**—a dome over a square compartment, entered through a colonnade. He introduced columned arcades into cloisters and palace courts and used them also as features of the arcade

in the **Loggia S. Paolo** and the **Ospedale degli Innocente** or Foundling Hospital.

The two lower stories of the main front of the Pitti Palace were designed by Brunelleschi, who also carved the fine crucifix in the Santa Maria Novella. He died in 1446 and was buried in the Cathedral of Florence.

Michelozzo.—Michelozzo, born in Florence in 1391, was the son of a tailor and became a pupil of Donatello. He worked in marble, bronze, and silver, one of the examples of his sculpture being the young S. John over the door of the cathedral. As an architect he enjoyed the friendship and patronage of Cosimo de' Medici, for whom he built the **Riccardi Palace**, which was the earliest example of stately domestic architecture in Florence and proved a model for subsequent Tuscan palaces. During a temporary exile of his patron he accompanied him to Venice, where he designed the **Library of San Giorgio.** When in 1437 Cosimo bestowed the **Monastery of San Marco** on the Dominican monks of Fiesole, Michelozzo was employed to remodel it, erecting, among other features, the beautiful arcaded cloisters, which no doubt inspired the architectural details in Fra Angelico's picture of "The Annunciation." At his death, which appears to have occurred in 1472, he was buried in San Marco.

Alberti.—Even in a higher degree than the two already mentioned, Alberti represented the versatility of the Renaissance, for besides being an architect he was also a painter, poet, philosopher, and musician. He was born in Venice in 1404 and at the age of twenty wrote a comedy in Latin verse, which in later years the publisher, Aldus Manutius II, printed under the impression

that it was a genuine classic work. Alberti was appointed to a canonry in the Cathedral of Florence and there established a reputation for being the finest organist of his time. He wrote works on sculpture and painting but is most celebrated for his treatise on architecture, "De Re Ædificatoria," which has been translated from the Latin into Italian, French, Spanish, and English. He was employed in Rome by Pope Nicholas V to restore the papal palace. At **Rimini** he was commissioned by Sigismondo Malatesta to remodel the **Church of S. Francisco**.

Its design, of which only the lower part of the façade was erected, was based on the Roman arch in Rimini, and along the south side Alberti constructed vaults to receive the bodies of his patron's friends. Both these elements of design were introduced into his church of **Sant' Andrea** in **Mantua**. Here the place of the side aisles is taken by successive chapels, separated by massive piers, which sustain the barrel vault of the nave. The piers are faced by coupled Corinthian pilasters, mounted upon pedestals. The intersection of nave and transepts is crowned by a dome, which was replaced by the present one in the eighteenth century. The façade of this church also is based upon the character of a triumphal arch, and **Sant' Andrea** became a type that was followed in many subsequent churches. In Florence Alberti designed the marble-encrusted façade of **S. Maria Novella**, in which he connected the side aisles to the nave by means of flaring consoles, a device that was unfortunately imitated in later churches. He died in Rome in 1472.

Cronaca.—Cronaca is to be mentioned as the architect of the **Strozzi** and **Guardagni** Palaces.

PRINCIPAL ARCHITECTS OF THE ROMAN SCHOOL

The Renaissance of the Fine Arts in Rome may be dated from the pontificate of Nicholas V (1447–1455), who vied with the Medici as a patron of scholars and artists. Alberti—we have noted—was employed by him, for as yet there was no Roman architect approaching the talent of the Florentine. And the dearth continued until the accession of Julius II in 1503, by which time Bramante had arrived in Rome and there began the golden period of Roman architecture, identified particularly with him and Raphael and Michelangelo.

Bramante.—Bramante was born in Urbino about 1444 and as a young man studied painting as well as architecture, the latter presumably under Alberti. He travelled through Umbria and Lombardy, studying Roman antiquities and obtaining various commissions, and passed some years in Milan, where his work included the enlargement of the abbey church of **S. Maria della Grazie**, to which he added a choir, transepts, and dome, in a style that represents the transition between the Gothic and Classic. Then, settling in Rome, he was commissioned by Pope Alexander VI to erect the **Cancellaria Palace**, and shortly afterwards prepared designs for the **Palazzo Giraud.** In both of these the Classic tendency is developed. It is even more pronounced in the beautiful little church of **S. Pietro in Montorio.** Founded on the design of a small Roman circular temple, it consists of a circle the interior diameter of which is only fifteen feet, crowned by a dome and surrounded with a peristyle of columns of the Doric order.

By the advice of Michelangelo Julius II entrusted Bramante with the design of the new **S. Peter's,** which

the Pope intended as a mausoleum for his own tomb. The work, which will be discussed later, was interrupted by Bramante's death, which occurred in 1514.

Raphael.—The continuation of **S. Peter's** was officially assigned to Bramante's nephew and pupil, Raphael (1483–1520), who, however, under the pressure of other engagements, did little to advance the work. Raphael's architectural designs in Rome include the **Façade of S. Lorenzo in Miranda,** the **Villa Madama** with stucco decorations by his pupil Giulio Romano, and the **Pandolfini Palace,** which was erected ten years after his death.

Giulio Romano.—Giulio Romano (1492–1546) was the architect of buildings in Mantua, his masterpiece being the **Palazzo del Te',** at **Mantua.**

Meanwhile, Bramante's other pupils were Baldassare Peruzzi (1481–1536), and Antonio da Sangallo (1485–1546).

Peruzzi.—Peruzzi passed his early life in Siena, but while quite young moved to Rome and studied architecture and painting. His reputation was established when he built for the Sienese banker, Agostino Chigi, a villa on the banks of the Tiber, which is now known as the **Farnesina,** a design remarkable for its grace and the delicacy of its details. The interior is famous for the frescoes, representing the myths of Psyche and Galatea, executed by Raphael and his pupils, while Peruzzi himself decorated a loggia with frescoes of the story of Medusa.

He was appointed architect of S. Peter's, though his design for its completion was never carried out. During the sack of Rome in 1527 by the troops of the Con-

stable Bourbon, Peruzzi fled to Siena, where he was elected city architect, and, as the city was preparing to resist attack, planned the fortifications which still in part exist. Returning to Rome, he designed several villas, of which the most important is the **Massimi Palace.** It is significant of the esteem in which Peruzzi was held by his contemporaries that at his death in 1536 he was buried by the side of Raphael in the Pantheon.

Ant. da Sangallo.—Antonio da Sangallo the Younger was one of the five members of a Florentine family, distinguished variously in architecture, engineering, sculpture, and painting. Coming to Rome when very young he became a pupil of Bramante, whose style he closely followed. Among his most notable works are the church of **S. Maria di Loreto,** near Trajan's Column, and the **Farnese Palace.** The latter, completed by Michelangelo by the addition of a grand cornice, is regarded by some experts as the finest example of a Roman palace.

Vignola.—Distinguished among the upholders of the purity of the Classic style was Giacomo Barocchio or Barozzi, better known as Vignola, from the name of the place in which he was born, in 1507. After practising for some time in Bologna, Piacenza, Assisi, and Perugia, he was summoned to Rome by Pope Julius III, and built the villa Pope Julius, which is now the **Etruscan Museum.** But the principal example of his style is the **Palace of Caprarola,** erected some thirty miles from Rome for the Pope's nephew, Cardinal Alessandro Farnese. It has a pentagonal plan enclosing a circular court. Above the ground story the façades consist of two stories, which have rusticated quoins at the angles and

are composed of an order of Ionic, superimposed upon Doric. Situated on a craggy projection, overlooking the little town of Caprarola and commanding wide vistas that reach to the Volscian Hills and the Apennines, with the dome of St. Peter's in the middle distance, this palace is embellished with beautiful gardens, the whole representing one of the most magnificent palace-villas of the Renaissance.

Vignola was one of the artists invited to **Fontainebleau** by Francis I. After the death of Michelangelo he was appointed architect of **S. Peter's** and erected the cupolas. He also furnished the design of **Il Gesu,** the Jesuit church in Rome, which was one of many erected along the lines of S. Peter's. His fame further rests on his writings, which include "The Five Orders of Architecture" and a work on perspective. He died in 1573.

Michelangelo.—At this date Michelangelo had been dead nine years, but it is convenient to consider him as the last great architect of the Roman School, for he introduced new elements of design, which in the hands of smaller men contributed to the decadence of the Renaissance style. Architecture played a relatively small part in his titanic and tempestuous career, which through the political confusion of the times and changes of popes, oscillated between Florence and Rome. In the former city he designed, as additions to Brunelleschi's Medici church of S. Lorenzo, the **Laurentian Library** and the **New Sacristy** or Mausoleum which contains the tombs of Giuliano, Duke of Nemours, and Lorenzo, Duke of Urbino.

In Rome, as early as 1505, Julius II had entrusted Michelangelo with the commission of erecting his tomb.

The ambition of the patron and the imagination of the artist united in a project so colossal that **S. Peter's** was to be rebuilt to serve as a mausoleum for it. Unfortunately for Michelangelo and perhaps for art, the death of Julius interfered with the project. His heirs desired a less expensive monument and succeeding popes were interested only in the rebuilding of S. Peter's. After forty years all that had been accomplished of the tomb were the statues of Moses and the "Bound Captives." "My youth has been lost," cried the sore-afflicted artist, "bound hand and foot to this tomb."

Even in the lifetime of Julius the planning of **S. Peter's** had been taken from Michelangelo and given to Bramante, and it was not until his seventy-second year that Michelangelo was called in to supervise the work. He adhered to Bramante's plan and added the supreme feature of the dome, which was completed after his death. Meanwhile, he finished, as we have noted, the **Farnese Palace** and remodelled the **Palaces of the Capitol**, the latter being his most characteristic work in architecture.

For in the novel design of these he introduced the so-called "one-order" treatment, abandoning the horizontal lines that mark the stories and carrying up through them a colossal order of pilasters. The effect lends grandeur and unity to the design, but at the expense of a violation of the principle of fitting the character of the exterior to the constructive character of the interior. It was a sacrifice of parts to the whole such as Michelangelo employed in sculpture and by his genius justified. When, however, his example was followed by others who had not his genius, it led to the degradation of style of the Baroque that alike in sculpture and architecture resulted in pretentiousness and extravagance.

The gradual decline from the purity of the Classic style to the showy and meretricious magnificence of the so-called "Baroque" period, was encouraged by the wealthy order of the Jesuits. It was characterised by a growing lack of architectural propriety, an increasing use of heavy and ill-applied ornament, and a general tendency to profusion of details for the sake of display—seen in broken and distorted pediments, huge scrolls, sham marble, excessive gilding, and a general riot of sculpture, often hysterical in its excess of emotional expression. The chief promoters of this decadence were **Carlo Maderna** (1556–1629), and **Borromini** (1599–1667), although the latter was an architect, capable also of finer achievement, as is proved by his colonnade enclosing the **Piazza of S. Peter's.**

Palladio.—In some degree a contributor to this decadence, through the misuse of his example by others, was Andrea Palladio (1518–1580), a native of **Vicenza,** where his most characteristic work is to be seen. In youth he studied the writings of the Roman author, Vitruvius, and of Alberti, and familiarised himself with the classic style by study in Rome. His own work, "The Four Books of Architecture," which contains measured drawings of antique buildings many of which have since disappeared, had a wide and great influence upon architectural development throughout Europe. In England, for example, it was translated and furnished with notes by Inigo Jones, whose own style was largely based on Palladio's.

The latter's work is chiefly associated with **Vicenza,** where his most important example, considered also his best, is seen in the double-storied arcades, added to the

Mediæval Basilica. In the lower story he introduced the Doric order; in the upper, the Ionic; and, in both instances, supported the arches on small columns, while large engaged columns, acting as buttresses, occupy the centre of the spaces between the arches. This treatment has been known since as the Palladian motive. These imposing and beautiful arcades were executed in fine stone, whereas through no fault, it is believed, of the architect, his palaces in Vicenza are mostly of brick, with stucco front that has suffered from decay. They include the **Palazzo Capitania** and the **Palazzo Barbarano,** and the **Villa Rotonda** which was freely imitated by the English amateur architect, Lord Burlington (1695–1753) in his villa at Chiswick on the Thames. Palladio's design of the Villa Rotonda is a square building fronted on all four sides by a portico, surmounted by a pediment, the roofing of the square sloping up to a low dome which crowns the central rotunda. At the end of his life he designed the **Teatro Olympico** of **Vicenza,** which was completed after his death by Scamozzi. In this he followed the directions of Vitruvius, but introduced features of his own, among which is the interesting one of an architectural background to the stage, built in perspective. Palladio executed work also in Venice, the churches of **Il Redentore** and **S. Giorgio Maggiore** being from his design, though the façade of the latter was by Scamozzi.

PRINCIPAL ARCHITECTS OF THE VENETIAN RENAISSANCE

The Venetians had developed a beautiful type of Gothic, touched, through their relations with the East, by Byzantine influence. It was admirably suited to the social requirements and taste of a community of mer-

chant princes and wealthy middle-class, comparatively removed by geographical position from the confusion of the times. For the wars of Venice, conducted on foreign soil, left her unscathed, and during the fifteenth century she reached the zenith of her commercial glory. But the decline set in, when her trade with the Levant was blocked by the Turkish occupation of Constantinople in 1453, and it was confirmed by the passing of her Eastern commerce to the Portuguese, following Vasco da Gama's discovery of the Cape of Good Hope route to India (1497–1503). But during the sixteenth century, though menaced both by the Emperor Charles V and the French king, Francis I, and engaged in almost perpetual struggle with the Turks, Venice maintained a splendid isolation and reached the height of her artistic development.

The gradual modification of the Gothic style was effected by the introduction of Classic features, especially at first of a decorative character. One of the earliest examples of this transition is the fine **Portal** of the **Doge's Palace**, adjoining S. Marco, which was erected by **Giovanni** and **Bartolommeo Buon**, who share with the Lombardi the chief place in the early Venetian Renaissance.

The Lombardi.—This celebrated family of architects became known in the person of a certain Martino who had two sons, Moro and Pietro (1435–1515), and two grandsons by the latter, Antonio and Tullio. To Martino belongs the façade of **S. Zaccaria**, the design of which was developed in Pietro's treatment of the beautiful little church of **S. Maria dei Miracoli**. Its plan is an oblong, terminating in a square chancel which is elevated considerably above the nave and is crowned by a dome. The façade is decorated with two

stories of engaged columns, dividing the surface into panels which are encrusted with coloured marbles, while the whole is surmounted by a semicircular pediment. The carved details are of exquisite refinement. This choiceness of decorative treatment reappears in the façade of the **Scuolo de S. Marco**, which was also by Pietro, who further proved himself to be the most accomplished member of the Lombardi by his façade of the **Vendramini Palace.**

Sansovino.—The full development of the Renaissance style in Venice is chiefly associated with Jacopo Sansovino (1477–1570). A pupil of the Florentine sculptor, Andrea Sansovino, from whom he took his name, he was at first employed by Julius II to restore antique statues and also to make the bronze reproduction of the Laocoön group, which is now in the Uffizi. After working in Florence and again in Rome, from which city he fled when it was sacked by the Germans, Sansovino reached Venice in 1527 and was welcomed by Titian and Pietro Aretino. Here from time to time he still produced indifferent sculpture, but became distinguished as an architect, his most important works being the **Library of S. Marco**, the **Zecca** or Mint, the **Cornaro Palace**, and the **Church of S. Giorgio dei Greci**—the last-named, erected by the Greek residents, being a remarkable evidence of the tolerant spirit of the Venetians in the matter of religion. In 1545 the roof of Sansovino's library collapsed and he was fined, imprisoned, and deprived of his office of chief architect of S. Marco. He was, however, reinstated through the intercession of Titian, Aretino, and other powerful friends and in the course of his duties reinforced the domes with bands of iron.

The free invention with which Sansovino used the Classic orders and the vigour and richness of his façades set the fashion for a sumptuousness of style that in his hands had an imposing magnificence, but in his followers degenerated into excess.

Sammichele.—Since Michele Sammichele (1484–1559) designed the **Gvimane Palace** in Venice, considered his masterpiece, and was also employed by the Signoria to construct the fortifications of the Lido, he may be mentioned here, but his chief work is associated with Verona. Born near the latter city, in the village of San Michele, the son of an architect, he was sent as a youth to Rome to study Classic sculpture and architecture. Among his earliest works is the uncompleted **Cathedral of Montefiascone.** His fame as a military architect was established when he remodelled the fortifications of Verona, introducing the new system of corner bastions and giving grandeur to the gateways by the use of rusticated masonry—a feature which he used effectively in his palace designs. The finest of these in his native city are the **Canossa, Bevilacqua,** and **Pompeii Palaces.** He wrote a work on "The Five Orders of Architecture."

Scamozzi.—Scamozzi has already been mentioned as adding the façade to Palladio's **Church of S. Giorgio Maggiore.** That his name disappears from Venetian architecture is due to the fact that he was one of the Italian artists who carried the Renaissance into Bohemia, and designed parts of the Hradschin palace in Prague.

Longhena.—One exception to the excessive mannerism of the Baroque, which characterised the Venetian style

of the seventeenth century, is found in the designs of Baldassare Longhena. These include the palaces **Pesaro** and **Rezzonico** and the church of **S. Maria della Salute.** The palaces are overcharged with ornament, especially with sculptured figures, yet as a whole they are dignified, with the imposing character due to bold, rich contrasts of light and shade that recall the example of Sansovino. S. Maria is built on the plan of a Greek cross, with a central dome, rising above an octagonal drum that is supported by curving buttresses. A secondary dome surmounts the chancel, while adjoining it is a campanile. Situated at the entrance to the Grand Canal, the whole mass, especially when viewed from a distance that reduces the disturbance of the statue-ornaments, presents a mingling of picturesqueness and stateliness that makes it one of the most beautiful features of the city.

To the latter part of the sixteenth century belong a number of imposing palaces, erected in Genoa by the commercial princes, many of which were designed by **Galeazzo Alessi** (1502–1572). They include the **Balbi, Brignole, Durazzo, Doria-Tursi,** and **Pallavacini.**

RICCARDI PALACE, FLORENCE

Built for Cosimo I de' Medici, by Michelozzo. Early Renaissance. P. 358

PALAZZO VECCHIO

Or Municipal Palace of Florence; by Arnolfo di Cambio. Gothic Style. P. 358

CA D'ORO, VENICE

Gothic Style, by Giov. and Bart. Buon. P. 360

VENDRAMINI PALACE, VENICE

Renaissance Style, by Pietro Lombardo. P. 360

FARNESE PALACE, ROME

By Sangallo; the Cornice by Michelangelo. P. 363

COURT OF THE FARNESE PALACE

Considered the Most Imposing in Italy. P. 363

CAPITOL PALACES, ROME
By Michelangelo. P. 363

LIBRARY OF S. MARK, VENICE
By Sansovino. P. 365

S. ANDREA, MANTUA

By Alberti. P. 367

S. SPIRITO, FLORENCE

By Brunelleschi. P. 367

S. PETER'S, ROME

SHOWING FAÇADE, PIAZZA AND COLONNADES. P. 370, ET SEQ.

INTERIOR OF S. PETER'S, ROME

P. 370, ET SEQ.

CHAPTER III

RENAISSANCE ARCHITECTURE IN ITALY—CONTINUED

The method that we have followed so far in this book has been to study architecture in relation to problems of construction and to the materials employed, and to think of a building as an organic growth determined by plan, site, and the purposes for which it is intended—as a structure in which all the parts are co-ordinated to the whole, each directly functioning in the completed scheme. This is the architect's way of considering his problem. So we have followed it, in the desire to avoid the error into which architects tell us that most laymen fall of thinking only of the outside of a building—how it is decorated, whether the design seems to be handsome or the reverse.

When, however, we come to the study of Italian Renaissance architecture, some architects tell us that we must adopt another method of judgment. These are the architects who are out-and-out advocates of the Italian Renaissance style, considering its achievements to be "supreme." They admit that the Italian architects were less concerned with problems of construction than with general beauty of design; hence they were actuated not so much by logic as by feeling; and feeling especially for detail. They displayed extraordinary genius for design, both in the choice and disposition of the decorative effects and in the skill and refinement of their execution. They were designers rather than constructors.

This being the case, they should be judged accordingly.

To estimate their work by the test of constructive logic is arbitrary and unfair. They should be judged by what they started out to accomplish; by the character and quality of their designs.

In a word, as it may appear, these advocates would have us apply a pictorial test; such a one, for example, as may serve in the case of the great picture, "Marriage in Cana of Galilee," by Paolo Veronese. We do not trouble to consider the appropriateness of the architectural setting, still less to explain the functions of its several parts; we accept it without qualification as contributing to a monumental design.

Very possibly this actually represents the main attitude of the Italian Renaissance artists toward architecture. They thought of it in its pictorial aspect and practised it primarily as an art of design. With them began the modern habit of conceiving a building primarily as a design on paper. It is an effect of what we have already mentioned—the separation of builder and designer that characterised the Italian Renaissance.

Accordingly, while the following comparisons are based upon the principles that we have been adopting throughout this book, the reader should bear in mind the exception that has been taken to this method of judgment.

Palazzo Vecchio—Riccardi Palace.—A good idea of the transition from the Gothic to the Early Renaissance in Florentine Architecture may be gained from a comparison of the **Palazzo Vecchio** and the **Riccardi Palace.** The former was built by Arnolfo di Cambio in 1298, as the Municipal Palace of the Podesta and Signoria. The Riccardi was erected in 1430 by Michelozzo for Cosimo I de' Medici. While the Republic still survived as a name,

he had usurped the actual power and occupied the Palazzo Vecchio until the completion of his own mansion, which was thenceforth to be the centre not only of the Medicean domination but also of its courtly splendour and liberal patronage of literature and art.

Each edifice presents to the outside world a cubical mass, while the interior includes a cortile or open court. But the Vecchio is the severer in design, as befits Republican simplicity; it still has something of the character of a mediæval fortress, due largely to the heavy battlemented cornice that projects on massive corbels, with machicolations or openings in the floor of the gallery, from which defenders might drop missiles on an attacking force. A similar feature surmounted the original tower (for the present superstructure was added later)—a tower that was an additional source of defence as well as a lookout for the detection of fires or other local disturbances. It still served these purposes under the despotism of Cosimo; so that no tower was needed for his house. Meanwhile, he and his successors had ever to be on the watch against sudden alarms, so that it was admissible to preserve somewhat of the fortress character—massive masonry, with door and window openings, that might not be difficult to defend. On the other hand, it would be impolitic either to make the purpose of protection too apparent or to excite hostility by too lavish an appearance of grandeur on the exterior. Moderation must be the keynote of the design, and the facilities of luxurious living should be confined to the interior.

The result is a modification of the Palazzo Vecchio design by the introduction of classic details. A classic cornice replaces the machicolated; round arches supplant the pointed arches, the windows of the upper stories, in place

of trefoils, have round-top lights, separated by a circular column. They are technically known as of the *arcade* type, while the windows of the ground floor are changed to rectangular shapes and are of the *architrave* type, that is to say set in moulded frames, which are supported on consoles and surmounted by classic pediments. Moreover in all these details, attention has been paid to refinements of modelling; there is a choicer feeling of proportion in the adjustment of the openings to the solid wall spaces while the divisions of the stories have been distinguished by projecting string courses and in such a way as to mark the importance of the second story or *piano nobile*. A superior refinement and logic of arrangement have regulated the whole design. The building, in fact, reflects the changed social conditions and the new mental and æsthetic attitude toward life produced by the study of classic literature and works of art.

Ca d'Oro—Vendramini.—Now if we shift our glance to Venice and compare the façades of the **Ca d'Oro** and **Vendramini Palaces**, we discover a great difference between them and the Florentine examples. The Ca d'Oro was erected by the Brothers Buon in the fifteenth century, a reminder of how late the Gothic style was continued in Venice. The Vendramini, Pietro Lombardo's great achievement in domestic architecture, was completed in 1481. What a contrast both present to the Riccardi! It is an expression of different habits of life. There is in both Venetian buildings the suggestion of greater social security and a freer intercourse with the outside world and less obstructed enjoyment of out of doors. The ample windows of the Vendramini spread a welcome broadcast. And while the arcaded loggia which distin-

guished the Ca d'Oro have been replaced in the Vendramini by a balcony in the principal story and have disappeared above, the change means a brighter lighting of the interior.

It is to be noted that the design of the Ca d'Oro is incomplete. One has to imagine on the left a wing similar to that on the right. The massing of the openings in the centre of the façade, instead of their even distribution along the whole front, was peculiar to Venetian palaces. It is apparent, although in a less pronounced manner, in the spacing of the façade of the Vendramini. Another Venetian peculiarity is the limiting of the beauty of the design to the main façade. Even when a side abutted on another canal or a garden, the walls were finished in stucco instead of marble; embellishments were omitted and, worst of all, not even was the cornice continued. These limitations impair the integrity of the design and seriously diminish its dignity. The fact is even more apparent in the case of the Vendramini, for by this time the horizontal members of the façade had acquired a definite constructive meaning, and the failure to continue them around the sides betrays an indifference to the logic of design.

The façade of the Vendramini is no longer *astylar* (columnless), as, with the exception of the window columns, is that of the Riccardi. The adaptation of classic details has proceeded so far that pilasters are introduced as decorative features in the ground story, and engaged columns in the upper ones; an excuse for their appearance being suggested by attaching their capitals to the string courses and cornice. This device was drawn from the example of the Roman buildings, in which the Greek relation of upright and horizontal members was

diverted from an element of construction into an element purely of design. Further, while the windows of the Vendramini recall the character of the *arcade* type, they have advanced to the *order* type, the openings being framed by pilasters or columns. Thus, this design embodies more or less all the changes which the Early Renaissance brought about in secular buildings.

Vendramini—Cancellaria.—Comparing the **Vendramini,** however, with Bramante's adaptation of classic details as illustrated, for example, in the **Palazzo della Cancellaria,** we can see how far removed it is in feeling from the productions of the fully developed Renaissance. By the latter time (1505) the nutriment derived from the antique had been digested and assimilated. The antique not only contributed to, but, in its revived form, was becoming a part of the spirit of the time. Architecture was becoming identified with a culture that was fast losing its fresh, Italian inspiration in an unqualified admiration and imitation of what was antique and pagan.

Compared with the Vendramini or even the severer Riccardi, the Cancellaria exhibits a precision of style that is rather close to formalism. The design is less a product of inspired invention than of scholarly adaptation. It may well strike one, especially at first sight, as cold, lifeless, even pedantic; and it is not until one has studied the design in some detail and become conscious of the refinement of feeling and finesse of taste, involved in the relation of the parts to the whole, that one is in a mood to recognise its claim to admiration.

The façade is constructed of blocks of travertine, taken from the Colosseum—for notwithstanding their reverence for antiquity the Italians of the Renaissance were prone to the vandalism of robbing Peter to pay Paul. An order

of Corinthian pilasters with strongly marked cornices and string courses, embellishes the upper stories, in which also is introduced the novel arrangement of alternately narrow and wide spacings, the contrast being subtly balanced by the window openings. Noticeable is the variety attained by the alternating of square and round topped windows, and also their distribution to mark the relative importance of the several stories. In the windows of the *piano nobile* the effect of the round-top lights is heightened by a rectangular frame, formed of pilasters, decorated with arabesques, while the upper part includes spandrels relieved by a single large rosette and surmounted by a delicately proportioned cornice.

Cancellaria—Farnese.—It is interesting to compare the official **Cancellaria** with the famous domestic example, the **Palazzo Farnese.** The latter dates from 1530 to 1546, when the façade designed by Sangallo, some say with Vignola's co-operation, was completed by Michelangelo. His contribution was the cornice, which by its boldness of projection and richness of detail redeems the comparative monotony of evenly spaced windows and repeated framings. However, it is the court of this palace, said to be the most imposing in Italy, that presents its finest claim to distinction, and here the two lower stories, erected by Sangallo, are superior in freedom of design, as well as dignity, to the more cramped and crowded upper one that was added by Michelangelo.

Capitol Palaces.—The latter, a few years earlier, namely in 1540, had begun the erection of the **Capitol Palaces,** a design that flanks three sides of a square, the right and left of which are occupied respectively, by the **Palazzo dei Conservatori** and the **Capitoline Museum,** both completed in 1542, while the centre, finished in 1563,

a year before Michelangelo's death, holds the **Palazzo dei Senatori.**

In these façades appears the innovation of pilasters, carried through the two upper stories. This emphasis of the vertical lines contradicts the internal division of the structure into stories and is at the sacrifice of the horizontal lines of the façade. The latter are broken up into balconies, while the interior division is only hinted at by the windows. But Michelangelo with the audacity of genius rejected proprieties of detail and even logic of structure, as he was prone to do also in his sculpture—witness the recumbent figures on the Medici tombs—for the sake, as we should say to-day, of a grander and more impressive synthesis. In a word, he sacrificed the parts to the whole; and to secure the impressiveness of the whole, ties the pilasters together at the top with an entablature that comprises a boldly projecting cornice and is additionally emphasised by the crowning feature of a balustrade. Except that the cornice takes the place of pediments the principle of design is virtually that of a Roman temple, diverted from its purpose and brusquely made to accommodate itself to novel conditions. In the hands of Michelangelo the end may be said to justify the means, but this device of ignoring the interior necessities of construction in favour of an arbitrary exterior design became a precedent that contributed largely to the decadence of the Renaissance style. Yet, after all, it was only carrying to a destructively logical conclusion the use of the classic orders as elements not of constructive but of purely decorative design.

We have already noted in the case of Gothic architecture that its decadence was exhibited in a superabundance of decorative detail, and a similar course appears in the

Renaissance. Much of the responsibility of the change is attributed to Sansovino. While Michelangelo magnified the decorative, the Venetian architect elaborated it. His façade of the **Library of San Marco** may be cited as an example.

Capitol Palaces—Library of S. Mark.—If we compare the Library with the **Capitol Palaces** we discover several important differences. In the Venetian building the divisions of the interior are indicated by the emphatic horizontal features; and the latter, as well as the deep openings of the arcade and of the windows, produce a depth of shadow effects, which in combination with the lighted surfaces results in great variety and richness. It is precisely these qualities, which are also elements in the design of Hellenic and Roman temples, that Michelangelo lost or discarded in his adaptation. Contrasted either with a temple or with Sansovino's Library, the Capitol Palaces, grandiose although they are, seem tame and tight, lacking in structural vitality. Sansovino introduced vigour into his design by increasing the projection of his large and small columns and by using the latter in couples; also by giving a corresponding projection to all the decorative details and by introducing sculptured figures into the spandrels of the arches and the frieze.

The principle of his design, stated in ordinary terms, was: If such and such things are good, more of them will be better. It was a principle that might well commend itself to the Venetians' love of pageantry and display. Sansovino had sufficient taste to know how far to carry the elaboration; but in the hands of succeeding architects his restraint was exchanged for license, variety degenerated into fussiness, and elaboration became extravagance.

Pesaro Palace.—These faults are discernible in the Pesaro Palace (1650–1680) by Longhena, a product of the Venetian Rococo spirit, and by no means an extreme example. For it preserves a certain dignity of mass notwithstanding that it is overcharged with ornament that gives it an effect of trickiness and restlessness. And the latter, it is to be noted, is partly due to the device, which for a long time had been prevalent, of carrying the horizontal moulding around the projecting capital of an engaged column or pilaster. Borrowed from Roman usage, it represents an element of decoration that tends to convert the contrasting quietness of the horizontal lines into a jiggety disturbance. This palace, however, can lay claim to the distinction that the superimposed orders are continued, with pilasters instead of columns, along the façade that abuts on the side canal.

ECCLESIASTICAL BUILDINGS

We have now to trace the progress of the Renaissance style as it affected Ecclesiastical architecture. It is maintained by enthusiastic advocates of Gothic architecture, such as Ralph Adams Cram in his inspired little book, "The Gothic Quest," that whereas Gothic architecture was evolved by the Church and laity through the impulse of a common Faith, and was determined in all its essential particulars by the symbolism of the Christian religion and the requirements of Christian worship, the change effected by the Renaissance was a reversion to the architectural types of Paganism. Renaissance ecclesiastical architecture did not grow; it was formulated out of precedents that were the direct antithesis of Christianity and Christian worship; derived either from temples that were built after the belief even in the Pagan

religion had languished or died out, or from types of secular architecture, such as baths, basilicas, and triumphal arches. Therefore it was false in principle and illogical and insincere in fact.

It is difficult not to agree with this criticism; the more so, that it is a matter of knowledge that the Renaissance style was developed by ecclesiastics and laity who, while they tolerated the traditional religion—"If we are not ourselves pious," as Pope Julius II said, "why should we prevent the people from being so?"—were in their own tastes, convictions, and habits of life notoriously pagan. Accordingly, it is not the aspiration of the soul, the ascending confidence of faith, the yearning of the spirit beyond the confines of the flesh that are embodied in Renaissance church architecture; but, increasingly, the pride of intellect, the pride of life, and the satisfaction of the senses in ceremonial display.

S. Spirito—S. Andrea.—We will compare first Brunelleschi's Church of **S. Spirito** in **Florence** (1476) with Alberti's **S. Andrea** in **Mantua** (1512). Professor Fletcher points out the close analogy between the former and the Romanesque church of the Apostles, erected in Florence during the ninth century. It represents, in effect, a reversion to the features of the Tuscan Romanesque—vaulted aisles, a flat ceiling over the nave, surmounting a high clerestory and aisles. For the support, however, of the low dome over the crossing, Brunelleschi revived the Byzantine system of pendentives, which henceforth were used in all the Renaissance domes. Classic influence is chiefly apparent in the details of the columns, which present probably the first example of fragments of entablature placed upon the capitals to sustain the spring of the arches.

Alberti's design, on the other hand, is unqualifiably an adaptation of Roman style, except in the case of the dome, which is supported by pendentives and raised on a drum. But the latter assumes the classical form of a peristyle of columns surmounted by an entablature. The roof of the nave is barrel vaulted and coffered in the Roman manner and springs directly from the entablature, which rests on piers that are decorated with engaged pilasters of the Corinthian order. The façade of the porch supplies the motive of the whole design, being an adaptation of the Roman triumphal arch in Mantua. Accordingly, it is composed of four Corinthian engaged columns, mounted on pedestals in the Roman manner, supporting an entablature and pediment. The three intervening spaces are occupied by doors, over each of the side ones being a window above a window, while the central door is flanked by two columns, which support a cornice and arch that frame a lunette. If the student will compare it with the main portal of some Gothic or Romanesque church, he will discover an instructive difference.

Il Gesu—S. Giorgio Maggiore.—Here is a further comparison of Renaissance church-façades:—the Jesuit Church in Rome, **Il Gesu** (1568) and **S. Giorgio Maggiore** in Venice (1560). The former is by Vignola; the latter was erected by Scamozzi, the pupil of Palladio. But Palladio designed the rest of the church and, since the façade was built during his lifetime, may have had more or less to do with its design. It is at any rate in the Palladian manner.

Both Palladio and Vignola were pronounced classicalists, and yet they contributed to the decadence of the Renaissance style. It is true that Palladio's own style was characterised by a marked severity; note the present

façade which presents a severely formal application of columns, entablatures, and pediments. But it involves a feature that readily lent itself to extravagant exploitation; namely, the emphasis upon colossal columns. Vignola's design, on the other hand, is characterised by a multiplication and elaboration of features, which his sense of classic propriety has kept within ordered bounds but which a less refined taste might easily degrade into exuberant pretentiousness.

And indeed a certain pretentiousness marks both these façades. They make claim to being imposed by methods that are actually a pretence. For neither design has grown out of the necessities and circumstances of the building. Each represents the arbitrary importation of alien ingredients, pieced together to conform to the principles of a style that was evolved for other purposes and conditions. Each design is false in motive and specious in its application of principles; and, since lies breed lies, it must share responsibility for the flagrancy of specious and pretentious shams that in time ensued from it.

And, already, in both these designs the imitation of the antique results in cold and rigid formalism. Compare, for example, Vignola's façade with one of the Tuscan Romanesque, for instance, Pisa cathedral. The architects of the latter borrowed from the Romans the use of applied arcades of arches and columns; but used the device frankly as a decorative sheathing, subordinated in scale to the constructive mass, and maintained the rich simplicity of effect by repetition of the same decorative motive.

Vignola, however, treated his sheathing as if it had actual constructive meaning; and, moreover, multiplied the motives. Big, coupled columns, mounted on pedes-

tals, supported an entablature, the cornice of which becomes the support of another series of big, coupled columns, which make a great display of supporting a little pediment. Comparing this Renaissance example with the Pisan, one may be reminded of a circus incident. At first there enters a performer who with delightful agility and grace keeps a number of balls moving lightly in the air. He is followed by another, who, assuming the attitudes of an Atlas supporting the world, labours with a cannon ball, which, when it is finally tossed aside, proves to be no heavier than a football.

Scarcely less incongruous is the Palladian design, with its colossal framework of columns, entablature and pediment, and the paltry scale of its doorway and windows. And then the enormity of the broken pediment, the two parts of which form the front of the series of side-chapels that flank the interior of the nave. Of course there is a sort of callous logic represented. The pediment is the end of a sloping roof; therefore, if the roof be separated into two parts, why not separate the pediment? But what about the taste which, as we have seen, always tempered the logic of the Greeks? Could the Greek taste have tolerated the cleavage in half of a little temple design and the swaggering intrusion between them of a giant design and persuaded itself that the domination of the latter produced a harmony of relations?

S. PETER'S

The culminating achievement of the Italian Renaissance was the new Church of **S. Peter's**, the erection of which, dating from 1506 to about 1626, covers the whole period of the rise and decline of the Classic movement in Rome.

The original plan, as laid out by Bramante, was a

Greek cross, comprising, that is to say, four equal parts. On this he proposed to design a building that should combine the three great barrel-vaulted halls of the Basilica of Constantine with the dome of the Pantheon. In 1514, the year preceding Bramante's death, Sangallo the Elder, Raphael, and Fra Gioconda da Verona were associated with the work; but the advanced age of the first and third and Raphael's preoccupation with painting and his early death caused little to be accomplished.

Meanwhile a difference of opinion had arisen as to whether the plan should be a Greek or Latin cross. The construction was continued under the directorship of Sangallo the Younger and Peruzzi, until in 1546 Michelangelo was appealed to. He rescued the ground plan of Bramante, reinforced the piers which the latter had begun at the crossing, and made drawings and a wooden model of the dome as far up as the lantern and actually completed the erection of the drum.

He was succeeded by Vignola, who added the four cupolas around the dome. The dome itself was completed from Michelangelo's model, and finished (1585–1590) with a lantern, by Giacomo della Porta and Fontana.

During 1605–1612, at the instance of Paul V, the nave was lengthened by Carlo Maderna to form a Latin instead of a Greek cross and the façade was erected.

Finally, between 1629 and 1667, Bernini constructed the brazen baldachino and lavished sculpture on the interior, while completing the exterior effect by the colonnades which enclose the Piazza.

Easily the largest church in the world, S. Peter's compares with other large churches as follows, the figures representing square yards of area in round numbers: **S. Peter's,** 18,000; **Seville,** 13,000; **Milan,** 10,000; **S. Paul's,**

London, 9000; **S. Sophia**, 8000; **Cologne**, 7000. The interior measurement of S. Peter's is approximately 205 yards long; the nave being 150 feet high and 87 feet wide (the same dimensions as those of the great hall of the Constantine basilica). The dome from the pavement to the summit of the lantern is 403 feet, the cross adding another 30; while the diameter is 138 feet, about five feet less than the dome of the Pantheon.

The prolongation of the nave by three bays has destroyed the symmetry of mass, conceived by Bramante and Michelangelo, besides interfering with the exterior view of the dome, which is visible only from a distance. The east façade (for S. Peter's reverses the usual orientation from west to east) is, for all its magnitude, unimpressive. Its extension beyond the actual edifice at each end still further accentuates the comparatively mean scale of the portal. But scale is very generally sacrificed both on the exterior and in the interior of S. Peter's. This is attributed by experts to the change of design introduced by Michelangelo.

As arranged by Sangallo the Younger, the façades were to comprise the superimposed orders; for which Michelangelo substituted his scheme of the Capitol Palaces—a single colossal order, surmounted by an attic. He thus gained dignity at the expense of scale; for although the huge pilasters are eighty-seven feet high, they look much smaller, while the windows between them, each twenty feet in height, give an impression to the eye of about half that size. There is a similar apparent dwarfing of size in the piers and engaged columns of the nave, which actually measure to the top of the entablature one hundred feet. And this necessitated a corresponding increase of the dimensions of the sculptured figures in the

spandrels, which are twenty feet high, thus further overpowering the sense of height.

The noblest feature of the interior is the magnificent barrel vault of the nave, while the surpassing grandeur of the whole edifice consists in Michelangelo's dome.

Like Brunelleschi's it has an inner and an outer shell, and is constructed on sixteen ribs, which, however, are all visible internally. The chief difference is the elevation of the dome and drum upon a second and loftier drum, composed of coupled Corinthian columns and intervening windows. This design was an adaptation of those which had been made by Bramante and Sangallo the Younger. The former had suggested a peristyle of columns; the latter, two drums; and Michelangelo virtually combined the two. But, in doing so he conceived new proportions between the vertical parts of the drum and the curve of the dome, that give his design not only a superior majesty but also a superior lightness and airiness.

S. Peter's indeed, notwithstanding much extravagant, tasteless, and meretricious sumptuousness, due to Bernini and others, remains a stupendous monument to the genius of Michelangelo and Bramante and to the genius of the Italian Renaissance. It is the fit symbol of an age that gradually lost touch of the finer things of the spirit and grew to worship greatness, power, and pomp; that had all but discarded Christianity for Paganism.

Meanwhile the noblest trait of the Italian genius was its worship of beauty as well as power. The creativeness of the Italians was revealed in their extraordinary sensitiveness to all forms of beauty in the visible world; and in the world of intellectual conception, and in their marvellous aptitude for translating their impressions of

beauty into forms of equivalent refinement. Accordingly, the student of to-day visits churches to enjoy the treasures of pictured altar-pieces, sculptured tombs, pulpits, wonders of metal-work in screens and sacred vessels, marvels of exquisite craftsmanship in objects too numerous to mention. The **Sistine Chapel** draws him because of Michelangelo's frescoes, the **Stanze** apartments for Raphael's, and the adjoining **Loggia** for his pictured Bible. Again, it is Raphael's frescoes that lead him to the **Villa Farnesina**, while many another villa charms to-day by the beauty of its gardens and terraces, fountains, cascades, and fish-ponds, shaded alleys and grottos. In innumerable ways it is the accompaniments of Italian Renaissance architecture, as well as the architecture itself, that excite admiration and have their message for ourselves.

CHÂTEAU DE BLOIS

Gothic Part Built by Louis XII. P. 379

MAISON FRANÇOIS I, PARIS

Built in 1527. Note Unusual Size of Windows; also Richness of Intervening Pilasters. P. 380

CHÂTEAU DE BLOIS

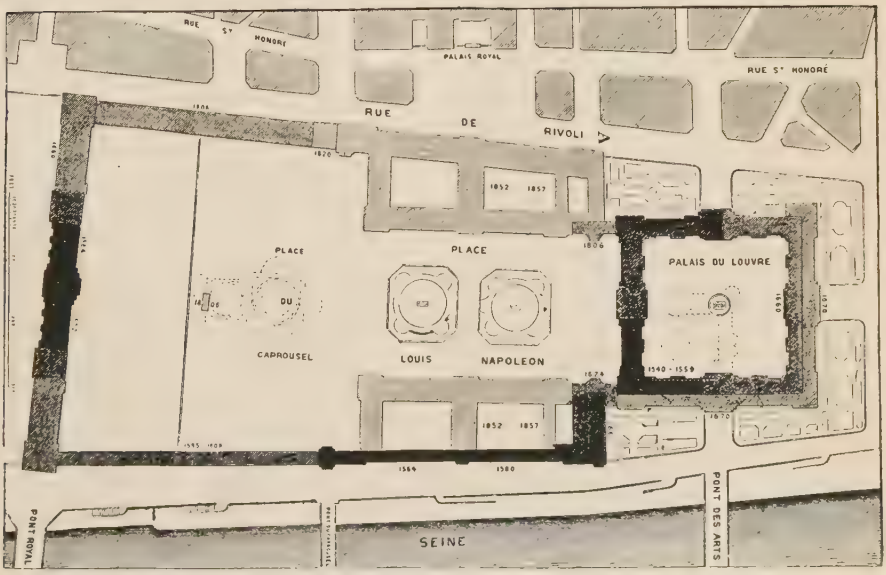
PART ADDED BY FRANCIS I, SHOWING STAIRCASE TOWER. P. 380

CHÂTEAU DE CHAMBORD

PERIOD FRANCIS I. P. 380

LUXEMBOURG PALACE

ERECTED FOR MARIE DE MÉDICIS, WIFE OF HENRI IV; BY SALOMON DE BROSSE. P. 386



PLAN SHOWING GROWTH OF LOUVRE

FROM THE ORIGINAL PART ERECTED BY PIERRE LESCOT—THE LEFT LOWER CORNER OF THE DARK QUADRANGLE ON RIGHT OF PLAN. P. 382, ET SEQ.

PAVILLON DE L'HORLOGE, LOUVRE

Wing to the Right, the Original Part by Pierre Lescot. The Pavillon and Left Wing by Lemercier (Louis XIII). Pp. 384, 385

CHAPTER IV

RENAISSANCE ARCHITECTURE IN FRANCE

1. *Early Renaissance.* Reigns of Charles VIII, Louis XII, and Francis I (1483–1547).
2. *Advanced Renaissance.* Henri II, Francis II, Charles IX, and Henri III (1547–1589).
3. Classic Period. Henri IV, Louis XIII, and Louis XIV (1589–1715).
4. *Rococo.* The Regency and Louis XI (1715–1774).

By the middle of the fifteenth century commercial relations with Italy and the number of Italian ecclesiastics holding benefices in France, had caused a steady influx of Italian influence, which became intensified by the military interferences of Charles VIII, Louis XII, and Francis I in the politics of Italy. The practical issue of these otherwise disastrous expeditions was the invasion of Italian culture into France.

Italian Culture.—It produced a new era of intellectual activity and fostered a new refinement of taste and social conditions. Its earliest results are typified in the career of Francis I. No French king before his time had received so liberal an education. Under the enlightened care of his mother, Louise of Savoy, he was early trained in Latin, Italian, and Spanish, sharing the studies with his gifted sister, Margaret, afterward Queen of Navarre, a patroness of literature and herself the author of the "Heptameron," a collection of stories, supposed to

extend over seven days in the telling and modelled on the style of Boccaccio's "Decameron." Francis also played the rôle of patron, surrounding himself with men of letters and artists; but while he encouraged the visits of Italian artists he was no less eager to encourage native talent. His patronage of Clement Marot, the first great poet of the French Renaissance, is a case in point and, corresponding with this *amour propre* regarding native talent notwithstanding his love for things Italian, was his employment of French architects, the services of foreign artists being used chiefly in the way of sculptural and painted decorations.

By the middle of the fifteenth century the great era of church building had been exhausted. The needs of the population for places of worship were fully satisfied; the profession of architect passed from the clerics to laymen, who, so far as ecclesiastical work was concerned, were busy embellishing existing churches with altar-furnishings, screens, pulpits, fonts, tombs, and so forth, in which the novel skill of the Italian craftsman was freely used.

School of Tours.—Thus, in consequence of Italian influence, a new school of French sculpture grew up, which centered in Tours, a city at this period specially favoured by the kings of France. The genius of this "School of Tours" was Michel Colombe, whose art represented a blend of Italian refinement and Gothic vigour; and it was precisely this mingled quality that characterised the architecture of the Early French Renaissance. It, too, was centered in Tours, and blossomed forth throughout the Province of Touraine. For it was a distinction of the French Court life of the period that it avoided cramped conditions of city environment and spread itself luxuri-

antly in the pleasures of country life. Accordingly, the architectural memorials of the Early French Renaissance are mainly the royal and noble châteaux that stud Touraine, especially along the banks of the rivers Loire and Cher.

Châteaux.—The conditions being so local and essentially an expression of the French idea of living, the model of the Italian palace—a product primarily of the needs and conditions of city life—could not be directly applied, while the logic of the French genius, working at that time freely, eschewed the attempt to make a compromise with imitation. So the châteaux of the Early French Renaissance retain the structural character of the Gothic Feudal castle but modify it in the way of Italian refinements, passing from military offensive and defensive purpose to that of elegant and luxurious living. Hence a distinction of these French châteaux is their picturesqueness and the degree to which they participate in the natural picture.

Instead of the unity of effect presented by an Italian palace, completely enclosing its cortile, they retained the Gothic characteristic of variety in unity; their extensive and differing façades being grouped around a spacious courtyard, and composed so as to furnish a variety of effects from different view-points of the landscape.

One side of the court was occupied by a windowless screen wall along which, upon the inside, ran a colonnade, while the centre was pierced by a large covered gateway that afforded a *porte-cochère*. The sides of the courtyard were flanked by buildings, devoted to the servants' quarters and the various offices connected with the home-life and the outdoor pastimes, while on the fourth side, facing the entrance, extended the main edifice, designed

for the occupation of the family and the entertainment of guests. The chief architectural distinction of this main part was reserved for its outer façade, where it abutted on a terrace, which communicated with the alleys, parterres, and fish-ponds of the formally laid out gardens and commanded views of the surrounding park.

In this adaptation of the plan of a Gothic fortress to the conveniences and pleasures of a country palace, some of the old architectural features were preserved but modified to decorative purposes. Thus the gateway was square and massive, recalling distantly the appearance of a donjon keep; the more so that round towers, built, however, with squared walls in the interior, projected from the angles. The angles also of the outer façades were embellished with similar towers, that preserved a picturesque contrast to the straight lines of the intervening masonry as well as presenting from their windows a variety of views of the surroundings. The actual machicolations that previously overhung the walls were now reduced to a decorative motive of little arches upon corbels, and the battlements gave way to balustrades. Further, the great hall was replaced by state apartments which, as in an Italian palace, occupied the second floor or *bel étage.*

Meanwhile, the crowning distinction of the Early Renaissance palaces was the high-pitched roofs, surmounted in the case of the turrets with lanterns or louvers, and everywhere enlivened with tall decorated chimneys and recurring dormer windows, in frames of richly carved tracery. It was, in fact, in the treatment of the roofs that the French architects chiefly preserved the Gothic tendency to verticality; and, correspondingly, it was in the gradual lowering of the roofs and the empha-

sis of the horizontal features of the façades that they exhibited their gradual conversion to Italian influences.

To-day, these *châteaux* of Touraine, embosomed in the beauty of their natural surroundings, quietly mirrored in the river's surface, still testify to the vigour and freshness of the Gallic genius in the dayspring of its acceptance of Italian refinements. A little effort of imagination, assisted, maybe, by pictures such as those of Eugène Isabey, can reconstruct in fancy the splendour and vivacity of the scene, when the terraces vied with the parterres in their blossoming of colours, as courtly men and women in the bravery of imported Italian velvets and brocades, lounged in elegant ease or gathered in a group to listen to a poet's latest *chanson,* while the activity of the courtyard, with its constant coming and going of russet and green-clad serving men, was stirred to a gayer aspect by the arrival or departure of a brilliant cavalcade of hunters with hawk and hound.

Château de Gaillon.—One of the earliest of the castles that marked the transition from Gothic to Renaissance was the **Château de Gaillon,** which was built for a Tourainer, the Cardinal George of Amboise, not, however, in Touraine, but in the neighbourhood of **Rouen.** Only fragments of it remain which are now preserved in the Ecole des Beaux Arts in Paris; but in its day it was a masterpiece of the Rouen School, which preceded that of Tours as a flourishing centre of art and letters. It much more nearly resembled in its lay-out the character of a fortified castle, having among other defensive details, a moat and drawbridge.

Château de Blois.—Meanwhile, a surviving example of the transition and Early Renaissance, is the **Château de**

Blois, the first of the Royal Palaces, begun by Charles XII and completed by Francis I. The earlier façade is still unmistakably Gothic; the arches of the colonnade are flat segments, characteristic of the latest period; the shafts of the columns are attached to piers that reinforce the upper walls and run into the cornice; the windows still have stone mullions and transoms, and the design and decorative detail of the dormer windows are purely Gothic.

On the other hand, in the façade of Francis I, the ornament of the dormer windows, as well as the decorative details elsewhere, are of Italian design. The cornice has been given a more pronounced decorative treatment; it has a bolder projection and, while the old machicolations are represented they are converted into a purely decorative motive. Further, although the square mullion windows still appear, they are framed with pilasters and cornice and the intervening spaces of solid wall are treated as panels and enriched with arabesques.

The finest feature of this wing is the staircase tower, which occupies the centre of the façade on the side facing the court. Polygonal in plan, it is constructed with four great piers, extending from the ground to the cornice, to which are fitted the rising balustrades. The whole is magnificently Gothic in its structural design as well as in the character of the canopied niches; but the actual ornament is Renaissance and was probably executed by Italian artists. In the pierced carving of the balustrades the decorative motive is the King's monogram, "*F*," intertwined with his emblem, the Salamander.

Château de Chambord.—Another famous staircase appears in the **Château de Chambord,** a palace which in

other respects also presents most interesting features. It was erected by Francis I (1526), probably as a hunting box, and the architect, Pierre C. Nepveu, has adhered more closely than had been usual to the plan of a feudal fortress. For in place of the gateway in the centre of the screen wall, a square structure with corner towers, which are round outside but square in the interior, projects into the courtyard, in the manner of a donjon-keep. Yet its purpose was not for defence but for ceremonial entertainment, since the interior contains four halls carried up to a great height and covered with coffered barrel vaults, while the centre of the plan is occupied by the staircase.

The latter, constructed in a stone cage, consists of a double spiral stairway, respectively for ascent and descent. It communicates with small rooms in the angles of the square and in the turrets, and finally with the lantern, which commands a superb view of the surrounding country. This lantern, octagonal in plan, the crowning feature of the exterior design, rises above the surrounding roofs, dormer-windows, and chimneys in two tiers of arcades, noticeably Italian in their system of pilasters and entablatures. They are surmounted by a domed roof, which supports an elaborate cupola. While the sky line thus presents a richly picturesque confusion, the façades are comparatively severe and in the ordered repetition of their details reflect the Italian influence. This is especially perceptible in the orders of Corinthian pilasters, in the general emphasis of the horizontal features, and in the use of round arches in the arcades. Meanwhile, the uniformity of the façades are relieved by the projecting angle-turrets, and by the ad-

mirably disposed masses of solid masonry, which besides their decorative value serve the practical use of backings to the interior fireplaces.

Other famous châteaux of **Touraine** are those of **Bury, Chenonceaux, Azay-le-Rideau,** and **Amboise.** Then came the day when Francis moved his court to Paris, thus shifting the scene of architectural activity. A rural palace sprang into form at Fontainebleau, a royal château at St. Germain-en-Laye, and a start was made with the city palace of the Louvre.

Palace of Fontainebleau.—The **Palace of Fontainebleau** was begun in 1528 by the architect Gilles le Breton. It followed the plan of a convent which it replaced, so that a remarkable irregularity distinguishes its arrangement. The design of the façades was probably influenced by Vignola and Serlio, who were among the artists invited from Italy by Francis I. They included also the painters Niccolo dell' Abbati, Il Rosso, and Primaticcio, and the sculptor, Benvenuto Cellini, who were employed upon the decoration of the interior. Indeed, it is for the magnificence of the interior decoration, especially in the Galerie de François I, and in the Salle des Fêtes, added by Henri II, and the Galerie de Diane and Galerie des Cerfs of Henri IV, rather than for architectural distinction, that Fontainebleau is celebrated.

Louvre.—The **Louvre** was commenced in 1546, the year preceding the death of Francis I. The design was entrusted to the French architect, Pierre Lescot, but is supposed to have been influenced by Serlio. It exhibits, in fact, a noticeably Italian character and marks the beginning of the advanced phase of the French Renaissance, associated with the reigns of Henri II, Charles IX, and Henri III (1547–1589), while subsequent additions, made

during the reigns of Henri IV, Louis XIII, and Louis XIV, record the progress of the matured Renaissance toward the period of pronounced Classicalism. Accordingly the history of the Louvre is an epitome of what this development involved.

The Palace was originally designed to cover the comparatively small square plan which had been occupied by the Gothic, fortified palace of Philippe Augustus, and the parts, executed by Lescot, comprise the west and south façades. In the reign of Louis XIII the original square was doubled in size, so as to enclose the present court of the, so-called, "Old Louvre." Meanwhile, under Charles IX, the adjacent palace of the Tuilleries was erected by the architect, Philibert de l'Orme, for Catherine de Médicis; and to connect it with the Louvre, a long gallery, subsequently completed by Henri IV, was built along the bank of the Seine. This was supplemented later by wings, forming three sides of the larger Court of the **Place du Carrousel**, which was finished by Napoleon I. Meanwhile, by Louis XIV a new front, bordering on the Seine, had been added to the **Old Louvre**, and finally, under Napoleon III, two wings were projected from the Old Louvre on the north and south of the Place du Carrousel, forming what is now known as the **New Louvre.** At present the only change from the plan thus gradually compiled, consists in the loss of the **Tuilleries** which was burnt by the Commune mob in 1871.

Old Louvre—Blois.—Returning to the original façade by Pierre Lescot, one may compare it profitably with both the earlier and the later façades of Blois. The Louvre design, like the earlier Blois, consists of three parts, but has become more unified. The arcade is replaced by deeply set windows, under round arches; the *bel étage*

now presents a regular recurrence of windows at closer intervals, and the dormer windows have given way to a continuous attic with a consequent lowering of the pitch of the roof. Again, when compared with the later façade of Blois, one notes in that of the Louvre the disappearance of the mullion divisions in the windows, their narrower and higher shape, and the Italian detail of their pedimental tops. Particularly noticeable is the more simplified and organic effect produced by compressing the four stories of the older design into an appearance of three divisions, very carefully balanced. Under this appearance, however, lies an actual fourth story, introduced as a mezzanine floor between the first and second. It is betrayed by the bull's-eye window or *œil de bœuf,* a characteristically French shape of window, and by a range of semi-circular windows which at first sight may seem to be a part of the windows below them. This exterior blending of the mezzanine with the first story results in strengthening the character of the lower part, so that it affords a resolute foundation for the *bel étage,* which in itself is effectively emphasised by the special treatment of the windows.

And this unity of design is further increased by the bold projection of the entablatures and cornice. The suggestion of verticality has been abandoned in the frank acceptance of the horizontal motive. Lest, however, this should produce monotony, the Gallic preference for variety relieved the flatness of the façades by doubling the width of the window-bays at the ends and in the centre, and by giving them a slight projection. Around this the entablatures are broken, while double pilasters are employed and the summit terminates in segmental pediments, which break into and relieve the continuous line of

the cornice. When further we note that in addition to the Corinthian and Composite pilasters and other carved details of purely Italian design, there are statues and much other enrichment, characterised by the free, vigorous feeling of French sculpture, the work it is said of Jean Goujon, we realise than even the advanced phase of French Renaissance, at least in its early stage, reflects still a temperament noticeably Gallic.

When it was decided, in the reign of Louis XIII, to double the size of the court of the Louvre, Jacques Lemercier, who was entrusted with the work, erected as a central feature of the prolonged façade, the "**Pavillon de l'Horloge.**" This was supplemented on the side facing west by another pavilion called after the famous minister of Henri IV and Louis XIII, the **Pavillon Sully.** The former occupies a width twice that of the double, projecting bays, and, while it continues the sequence of windows in the *bel étage* and attic, introduces in the former a large round-topped window. Further, the attic is surmounted by a clerestory of three windows, framed with twin-figured caryatids by Jacques Sarrazin. They support a pediment, above which rises a domical roof, divided by four well-defined ribs and terminating in a balustraded crown—a treatment of pavilions essentially French in character.

It is akin to that type of roof construction, which was called after the architect, François Mansart or Mansard, who popularised its use. The principle is the replacement of the continuous slope by a "hip" or "curb"—namely, the meeting of an upper and a lower slope at an obtuse angel; a form of construction which reduces the outward thrust on the walls by directing much of the strain to the post that supports the angle. When used

upon pavilions, it gives them something of the effect of towers.

East Façade.—Under Louis XIV the Old Louvre was completed by the addition of the east façade. The work had been entrusted to Bernini, who was a visitor at the court, but his project was rejected in favour of one designed by the King's physician, Dr. Perrault. This involved again doubling the size of the plan by the continuation of the north and south façades. In these the style of Lescot's was fortunately preserved, though another story was added to accommodate the extra height of the east façade.

The latter represents the full acceptance of the classical style, which reflects the taste of the time; and is such a design as an intelligent student of the writings of Vignola might compile. Its main feature is a colossal order of coupled Corinthian columns, forming a colonnade, behind which the walls of the edifice are set back. The uniformity of this front of six hundred feet is interrupted by projections at the ends and in the centre, the predominance of the latter being asserted by a pediment. The character of this façade is echoed on the south one, overlooking the Seine, by an order of colossal pilasters.

Luxembourg Palace.—Before enumerating other examples of the Classicism of Louis XIV, we must revert to a notable example of the advanced Renaissance; namely, the **Luxembourg Palace**, which was erected in 1611 by Salomon de Brosse for Marie de Médicis, the wife of Henri IV. In conformity with her Florentine tastes the design was based upon that of the garden front of the Pitti Palace, which is distinguished by its orders of rusticated pilasters. But the French character prevails in the plan, which presents a central main building or *corp*

de logis, flanked by wings that extend back and form the sides of a courtyard, which is separated from the street by a screen-wall with *porte-cochère.* Moreover, the garden front is distinguishably French in the picturesque variety obtained by the projecting portions that form terminal and central pavilions, crowned with characteristic roofs. It is a design of quietly elegant refinement.

A corresponding choiceness of quality was prolonged into the classical régime in the **Château de Maisons,** near **St. Germain-en-Laye,** by François Mansart and in the same architect's domical church of **Val de Grace, Paris,** in which he was assisted by Lemercier. Meanwhile, Mansart's nephew, Jules Hardouin Mansart, was associated with Levau in Louis XIV's special pride, **Versailles.**

Versailles.—This immense palace is representative at once of the monarchical spirit of the time and of the sterility of classicism. Colossally pretentious, for the total length of the garden façade is one thousand three hundred and twenty feet, the design in its monotonous repetition of orders, scarcely relieved by the tame projections, is also monumentally dull. It fronts upon formal gardens, laid out with terraces and fountains, that in their magnificence are a memorial to the genius of Le Nôtre. The decorations of the interior of the palace exhibit the unfortunate taste for prodigal display, represented in exuberant and oppressively heavy relief work, executed in gilded *papier maché,* and set off with prodigious canvases by Lebrun and his assistants.

J. H. Mansart also designed the **Place Vendome,** around the four sides of which all the houses are treated with a uniform order of colossal pilasters, out of scale with the size of the square and pretentiously inappropriate. His, too, was the Veterans' home, the **Hôtel des Invalides.**

Hôtel des Invalides.—The latter is vast but truly barrack-like, with tedious repetition of the orders; but is celebrated for the stately grace of the dome. This surmounts the church that is in the form of a Greek cross, the angles being filled with chapels, so as to make the complete plan a square. The exterior design of the dome includes a high drum, pierced with windows, between which project eight coupled columns that form buttresses. These terminate in carved corbels, which reinforce a smaller drum, with round topped lights. From this springs the dome; the grace of its curve being echoed in the airy cupola whose roof diminishes in concave curves to a soaring point.

The somewhat excessive height of the exterior needed on the inside very considerable reduction, in order to bring it into proportion with the rest of the interior. This the architect accomplished by erecting beneath the wooden shell of the outer dome two interior ones, a middle and a lower one, independently constructed. The lower, which rises immediately above the lower drum, has a large circular opening, through which is visible the decorations painted on the middle dome, which rests upon the upper drum and is lighted by its windows. The whole structure is supported upon four large piers, which, as in S. Paul's, London, are pierced by arched openings, leading, in the case of the Invalides, into the four angle chapels.

Another instance of a triple dome occurs in the Church of **S. Geneviève,** better known as the **Panthéon,** which we shall refer to later in connection with the Classic revival, although its construction, extending from 1755 to 1781, occupied a considerable part of the Rococo period.

Rococo.—The Rococo is marked by a further decline

into dry and pedantic formality in the use of the orders, which, however, in time produced a reaction toward a more intelligent, if uninspired, observance of the principles of classic design. It appears in the façade added to the Church of **S. Sulpice** in 1755 by the Italian, Servandoni. This comprises a Doric portico, supporting an Ionic arcade, above which, at the extremities, rise turrets in two tiers of orders. Other examples which mark the end of the reign of Louis XV will be referred to in the subsequent chapter on Classic Revival.

Meanwhile the style that is recognised as Rococo is characteristically exhibited in the interior decorations. These reflect the change of spirit that came over court life with the death of Louis XIV and the succession of the Duke of Orleans as regent during the minority of Louis XV. The old King under the control of Madame de Maintenon and his confessor had become gloomily religious; the court spirit, punctilious as ever, was ponderously dull. With the Regency it rebounded into lightsomeness. Versailles was abandoned for the Luxembourg; the peruke and stiff fashions gave way to powdered hair and elegance of costume; rigid etiquette was replaced with gay wit and gallantry; all that was lightest in the Gallic temperament bubbled sparkling to the surface. To the call of this new spirit the decorators responded. The papier-maché ornament was discarded for stucco; profusion still abounded, but it was no longer heavy and oppressive; it wandered in light luxuriance over walls, doors, and ceilings; exhibiting a fertility of decorative invention in its combinations of curly-cues, scrolls, shells, foliage, flowers, and rockwork. The last named motive (*rocca* in Italian) is the doubtful origin attributed to the term Rococo.

It was a style that characteristically avoided straight lines and, in general, the formality of arrangement which distinguishes classic ornament. Accordingly it fell under the ban of the Classical Revival and is always condemned by those whose preferences are classical. And, undoubtedly, its freedom often degenerated into license and its profusion became excess, especially in the hands of German or Spanish imitators. Yet, at its best, when considered as a setting to the costumes and manners of the period and as an expression of the social spirit, it represented something so vitally appropriate to the time and place of its creation that it commands the consideration of the student. Under an impulse infinitely inferior to that which inspired the decorators of the Gothic and Early Renaissance, it yet represents the same fecundity of Gallic creativeness.

CASTLE OF HEIDELBERG

On Right Ruins of the Heinrichsbau Wing, Adjoining Remains of Old Gothic Portion: on Extreme Left the Friedrichsbau Wing (1601). P. 394

ANOTHER VIEW OF THE HEINRICHSBAU

P. 394

BREMEN CITY HALL

NOTE GOTHIC WINDOWS, WITH RENAISSANCE PEDIMENTS, AND INTERVENING "GAINES." P. 395

PELLERSHAUS, NÜREMBERG

RUSTICATED MASONRY. P. 395

ANTWERP CITY HALL

P. 406

LIÈGE, COURT OF THE PALAIS DE JUSTICE

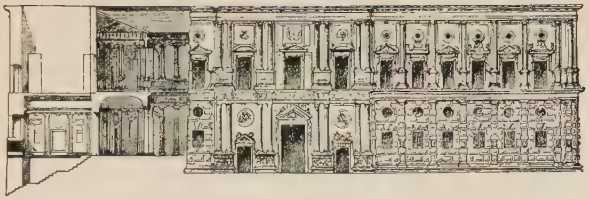
GOTHIC VAULTING AND OTHER DETAILS COMBINED WITH RENAISSANCE. NOTE BALUSTER-SHAPED COLUMNS; CAPITALS COVERED WITH GROTESQUE MASKS, FIGURES AND FOLIAGE. P. 406

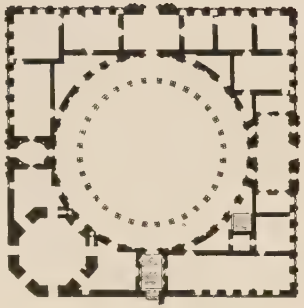
COLLEGE OF SANTA CRUZ, VALLADOLID

Choice Example of Early Renaissance, by Enrique de Egas. P. 399

COURT OF THE CASA DE ZAPORTA

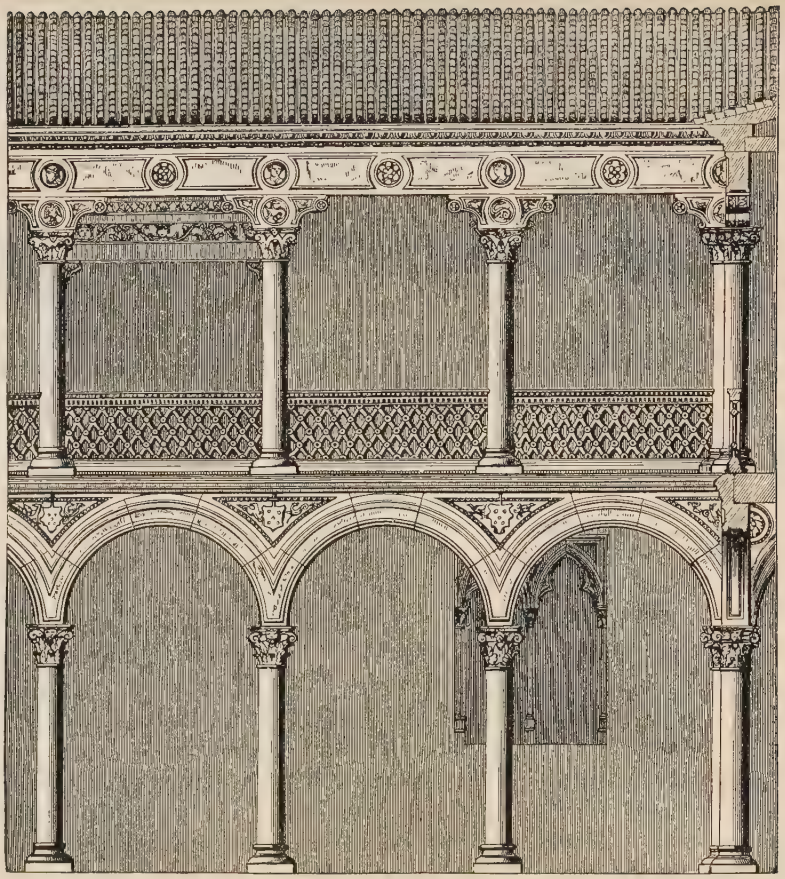
Note Arcade in the Second Story. P. 400





ELEVATION AND PLAN

Of the Uncompleted Palace in Classical Style, of Charles V in the Alhambra Grounds. P. 402

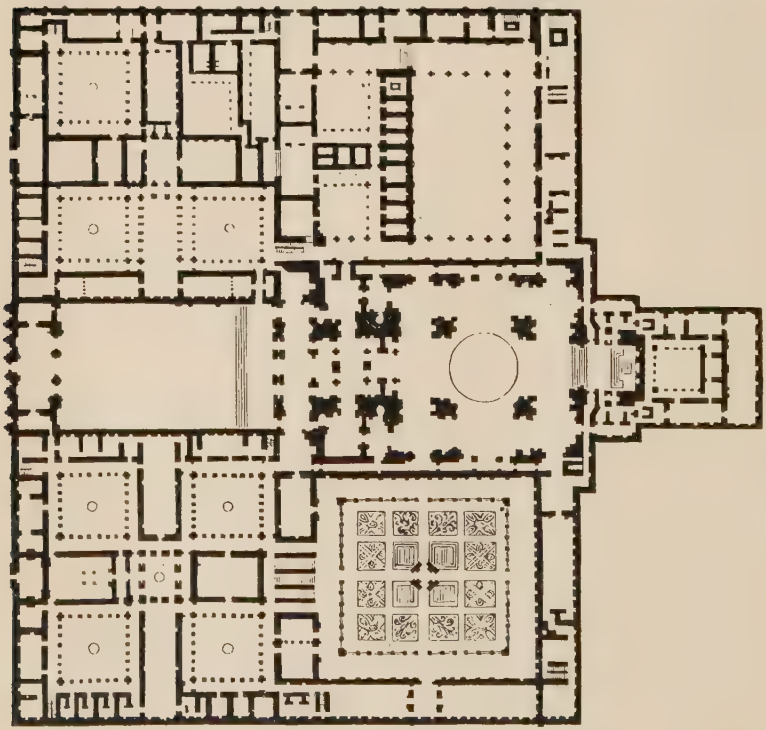


COURT OF THE COLLEGE OF ALCALA DE HEÑARES

By Alonzo de Covarrubias. P. 400

THE ESCORIÁL

A Palace, Monastery and Mausoleum. P. 403



PLAN OF THE ESCORIÁL

Imitating the Gridiron on Which S. Lawrence Was Martyred. P. 403

CHAPTER V

RENAISSANCE ARCHITECTURE IN GERMANY, THE NETHERLANDS, AND SPAIN

NOTWITHSTANDING the close commercial relations that cities such as Augsburg and Nüremburg maintained with Northern Italy, especially with Venice, the Renaissance influences did not make much impression on German architecture until about the middle of the sixteenth century. It had, however, appeared in the paintings and engravings of Dürer and Burkmair and in the sculpture of Peter Vischer—as in his **Tomb of S. Sebald in Nüremburg.** But even in architecture there had been symptoms of the spread of Italian taste, Italian architects being employed on castle-building, as in the case already mentioned, of the Venetian, Scamozzi, in Prague. These, however, were only sporadic instances; for two reasons conspired to defer a general movement: the deep-rooted Gothic feeling and the political conditions.

Architecture depends largely upon conditions of social stability, making for wealth and ease, and these had been disturbed by Charles V's long struggle to crush the nobility that upheld the Protestant faith. It was, therefore, not until security had been established by the Peace of Augsburg in 1555, that a widespread activity of architecture was resumed. It lasted until the outbreak of the Thirty Years' War in 1618. This covers the period of the Early and Later German Renaissance; the remainder of the seventeenth century being marked by a gradual decline into the extravagance of Rococo.

Characteristics.—Moreover, the German architects, after borrowing the Gothic style, had so fitted it, especially in the way of decorative details, to their own taste, that when at length they borrowed from the Renaissance, they preserved, except in rare instances, much of the Gothic feeling. The new style was employed chiefly in castles, domestic buildings, city halls, gild and corporation houses. In these the German love of irregularity, profusion, fantasticalness, and general picturesqueness still prevailed. It was displayed in the continued partiality for towers and turrets (octagonal, not circular, as in France), often containing spiral staircases; high-pitched roofs and decorated gables, carried up in steps; dormer windows, prolonged through several stories up to the height of the roof and emulating the effect of gables; oriel windows, curved or polygonal, projecting from the face of the façade or from the angles upon corbel-supports.

The German taste also showed itself in the character and distribution of the ornament. While this was apt to be spread freely over the façades and was used profusely in the decoration of the windows and doors, it was lavished especially on the gables and dormer gables, so that they are the distinctive feature of the design. To some extent the details of Italian ornament were introduced, but more generally the German carver followed his own taste for bold and deeply cut designs, showing a preference for rusticated masonry, including rusticated pilasters, and drawing on his fancy for grotesques, caryatids and the half-length figures, terminating in a pedestal, known as *gaines*. And the wood carver vied with the sculptor, especially in the interior decoration of ceilings

and wall panelling, while the exteriors as well as the interiors afforded scope for the fancy of the painter.

The ornamental tendency increased until the purpose seemed to be to cover every available space with decoration; while as the latter grew less and less organic, it became less original. The carver ceased to invent his designs and was satisfied to copy them with tedious repetitions from the pattern books which, compiled apparently in the Netherlands—one of them by Cornelius de Vriendt—circulated through Germany and, as we shall see, found their way to England. They comprised a heterogeneous assortment of motives, for title pages and frontispieces of books as well as for doorheads and other architectural details, and introduced a variety of designs in bands and straps, borrowed from the work of locksmiths and leather-workers. The degradation reached its climax in the Rococo ornament of the early eighteenth century, especially in the Zwinger Palace, Dresden, "the most terrible Rococo work ever conceived, if we except some of the Churrigueresque work in Spain."

In the neighbourhood of the Hartz Mountains, where forests abounded, timber was used with handsome effect in the design of the structure; beams, doors and window frames, corbels, and so forth being richly carved and often coloured. In the alluvial plain of the North, bounded roughly by a line drawn east and west through Berlin, the absence of stone and the abundance of clay encouraged the use of brick both for the structure and its decoration, and developed a skill in the handling of this material that could scarcely be surpassed. Elsewhere stone was plentiful and the main walls were constructed either of masonry or rubble covered with stucco.

Castle of Heidelberg.—Among the highest achievements of the German Renaissance is reckoned the **Castle of Heidelberg,** which affords a comparison of the early and later styles. For to the old Gothic fortress was added, in 1556, the wing known as the **Heinrichsbau,** which was supplemented in 1601 by the wing called **Friedrichsbau.** The latter is in good repair and used as a museum, but the earlier is a roofless shell, devastated, as was the Gothic part, by a fire which originated in a stroke of lightning in 1764. Consequently, to-day we view the façade of the Heinrichsbau without the dormer gables which are so marked a feature of the later design. And the loss, no doubt, helps to emphasise the horizontal character of the older façade. The design, in fact, throughout suggests a struggle to apply Italian principles and adjust them to German Gothic characteristics. Thus, orders of pilasters are employed in all three stories, but these are rusticated and alternately broken in upon by niches embellished with gaines. The windows have double lights separated by sculptured mullions and, although they are surmounted by pediments and cornices, the constructive simplicity of these details is interfered with by ornamental accessories.

The general conflict of effects becomes more perceptible when one compares this façade with that of the Friedrichsbau. Here the pilasters and entablatures are of bolder projection; the windows are well set back, their repetition is pleasantly varied by the traceried windows of the first story; the pediments are undisturbed by accessory carving. The walls present an agreeable balance between the horizontal and the perpendicular features; and then, above the cornice, the perpendicular asserts a final quiet predominance in the dormer gables. The

whole façade, indeed, suggests that the architect had thoroughly mastered the principles of Italian design and could apply them freely; neither yielding to them unduly nor muddling them with the Gothic motive, but blending them flexibly in an ensemble that, while it has derived a certain orderliness from the Italian, preserves the essential spirit of German picturesqueness.

City Halls.—Out of the variety of City Halls space permits only a comparison of two famous ones—those of **Cologne** and **Bremen**. Both are Gothic buildings modified by Renaissance additions. In the case of **Cologne** the two-storied porch was added in 1571. In style and detail, it is more purely Italian than usual. So much so, that it presents a somewhat incongruous addition. On the other hand, the Renaissance façade of the **Bremen** Hall, is more in harmony with the original Gothic edifice. It is true the arches of the arcades are pointed instead of round; but the spacing, proportions, and treatment of the upper masonry are very Italian in feeling. Again, while the windows are capped with pediments, they retain the mullions and, which is more significant, the height of the older, purely Gothic lights. Finally, the façade is crowned by a cornice, markedly Italian in the depth of its projection, above which appears the characteristically German roof and dormer gables. This façade, in fact, erected in 1611, presents another example of intelligent combination of the two styles.

Domestic.—As an example of domestic architecture we may study the famous **Pellershaus**, of **Nüremburg**. The masonry of the wall is rusticated throughout. The treatment of the first story with its arched doorway and windows is as massively reposeful as that of a Florentine palace; while, except for the corbels alternating with the

pilasters in the support of the entablature and the corbel-supported bay windows, the upper stories present a quite Italian orderliness. It is only in the huge dormer gable that the German feeling is allowed full play. The architect has utilised Italian principles of design; but he has emphasised the projection of the pilasters and of the entablatures that break around them; has exercised his German taste in the details of the pilasters; retained the German steps to the gable and embellished them with the characteristic ornament of obelisks, but has also filled in the angles with curving buttresses and, when he reached the summit, let himself go in the way of enrichments, using German gaines, the French bull's-eye, and Italian pediment, on which, with a fine flourish of German independence, he props a statue! Note also the pilasters and curved pediments of the small dormer windows.

Here, as in most examples of the German Renaissance, the decorative emphasis is lavished above the cornice in the treatment of the roof. And the Pellershaus combines the two principles of German roof treatment. For in some cases the roof ridge is parallel to the street and the several stories into which the interior is divided are marked by tiers of dormers, while elsewhere the roof runs at right angles to the street and the gable-end is the imposing feature. In this instance, however, while the ridge is parallel and two small dormers are introduced, the main dormer feature is magnified to the importance of an actual gable, and thus the picturesqueness of the two methods are united in one effective design.

Fountains.—Among the smaller memorials of the Renaissance are the fountains which abound in German cities: some of the finest examples being those of **Tübin-**

gen, **Hildesheim, Mainz, Rothenburg, Ulm,** and **Nüremburg.**

SPANISH RENAISSANCE

The election in 1492, of the Spaniard, Roderigo Borgia, to the Papacy under the title of Alexander VI, drew Spain into close relations with Rome, while the absorption of the Kingdom of Naples into the Spanish monarchy by Charles V in 1522 involved the country more and more in the political intrigues of Italy. At the same time the immense wealth that was flowing into Spain from her possessions in the New World gave an impetus to her trade with Italy and fostered the enrichment of such families as the Mendoza, Fonseca, Miranda, Ribera, and Velasco, who rivalled the merchant princes of Genoa and Milan. Thus a new era of splendour and of lavish expenditure was promoted in which the influence of Italian art began to penetrate Spain. The date of this Spanish Renaissance may be reckoned from the beginning of the sixteenth century.

In Spanish painting the example of the Flemish School was abandoned for that of the Italian; especially for the Milanese School of Leonardo da Vinci and the works of Raphael and Michelangelo. The sculptors absorbed the Italian influence either through the example of Italian craftsmen invited to Spain or by direct study in Italy, while architecture became affected by the example first of Bramante and later of Michelangelo. But the reaction to Italian influence of these three arts was different.

Painting needed reinforcement; it went to school with the Italians to master principles of drawing, foreshortening, perspective, and composition, as well as the art of fuller and more refined expression. It had to serve an

apprenticeship of imitation before it could develope its own individually native strength in the seventeenth century. But it was otherwise with architecture. The fundamentals of the art were thoroughly understood by the Spaniards through Gothic tradition and, when they came under the spell of the Italian, it was in the way only of modifying the design, especially the character of the decorative elements, in which they were assisted by their sculptors. In place of the flamboyant decoration of the late Gothic there grew up a new style of more refined ornament. And it was also a new style, both in its character and in the use made of it; a style created by Spanish architects and sculptors and confined to Spanish art, and known as *estilo plateresco* or silversmith's style.

Plateresque Style.—The Spaniards had inherited from the Moors a consummate skill in metal-craftsmanship; and now the inflow of silver from the New World gave a stimulus to the craft of the silversmith. It reached extraordinary development in the making of church plate, particularly in the *custodias* or tabernacles, designed to hold the "Host," which reached the magnitude of lofty structures, simulating towers and decorated with a wealth of intricate ornament of the most exuberant and yet delicate fancy. Foremost among these artists in silver was the family of Arphe, consisting of Enrique de Arphe, his son Antonio, and grandson Juan. Their work, which extended throughout the sixteenth century, began by being Gothic in character, but gradually reflected the Italian influence. It was so remarkable in its exuberant creativeness and so widely spread throughout the country—in **Toledo, Cordova, Santiago, Seville, Valladolid**—that its enormous effect upon architectural decoration is quite comprehensible.

The plateresque style is a combination of several elements: the freedom of the Gothic, the delicate profusion of Moorish ornament, and the ordered refinement of Raphael's arabesques, mingled into a new and living medium of decorative expression by the vitality and fecundity of the Spanish fancy. And a corresponding originality was displayed in the manner of using it. It was massed chiefly around the doors and windows. Its earliest appearance is in the decorated portals, added to the Gothic cathedrals or to the newly erected secular buildings, of which a famous example is the doorway of the west façade of the **University of Salamanca,** in the province of Castile.

The earliest architect to apply this sculptural embellishment to the façades of buildings is said to have been Enrique de Egas, a native of Brussels, trained in the Gothic style, who was supervising architect of the Cathedral of Toledo. Among the gems which he contributed to the Early Spanish Renaissance are the **College of Santa Cruz** in Valladolid, built for Bishop Mendoza, and the **Hospital** of the same name, erected by Cardinal Pedro Mendoza in **Toledo,** which served as a model for the **University of Salamanca.** All three of these edifices are celebrated for the magnificent decoration of their principal portal: the one in Salamanca being specially notable for the device adopted to offset the effect of foreshortening in the ornament remote from the eye. For the depth of the cutting is graduated from flat relief in the lowest panels up to a bold enrichment of light and shade at the top. Another feature of these buildings, particularly fine in the two earlier ones, is the interior court or *patio.*

Patio.—The importance of the patio is a distinctive characteristic of Spanish architecture, deriving, not from

the *cortile* of the Italian palace, but from the *atrium* of the Roman villa, preserved in the courts of Moorish buildings. The patio is surrounded on all four sides by colonnades of two stories into which all the rooms open, while approach to the second floor is given by a handsome staircase. A characteristic feature is the use of bracket columns, a well-known example being in the patio of the **House of Miranda** in **Burgos.** Sometimes, in the second story, an arcade is substituted for columns and entablature, as in the **Casa de Zaporta,** also known as the Infantado Palace, in **Guadalajara.**

Frequently the columns and surfaces of the patio are richly decorated with plateresque ornament, for the patio was the centre of the life and ceremony of the family. And this habit of domestic seclusion, inherited apparently from Moorish times, reacted on the exterior of the buildings; and, while the patio was luxuriantly decorated, a singular barrenness characterised the façades.

Thus the chief feature of the latter was the entrance doorway; the windows were few, small in size, and raised high above the level of the street, while occasionally a portico was added under the roof, where the inmates could take the air and view the outside life without themselves being seen. A famous example of this is seen in the **college** erected for **Cardinal Ximenes** in **Alcala de Heñares** by the Castilian architect, Alonzo de Covarrubias, son-in-law of Enrique de Egas. He also designed the **Archbishop's Palace** in the same city and the celebrated **Chapel of the New Kings** in the **Toledo Cathedral.**

Cathedrals.—Another northern centre of the Early Spanish Renaissance was **Burgos.** Here the master of the plateresque style was Diego de Siloe, sculptor and architect, who built the celebrated **Golden Staircase** in

the Cathedral, to connect the higher levels of the old, thirteenth century Puerta de la Coroneria, with the floor of the north transept by a flight of 39 steps, which has a gilded balustrade, richly embellished and bearing the arms of Bishop Fonseca.

In 1520 Siloe was summoned to **Granada** to superintend the building of the **Cathedral** which had been designed in the Gothic style by Enrique de Egas. This, the earliest and most remarkable of the Renaissance cathedrals of Spain, represents an application of the Classic orders to the piers which support the vaulting. But its most distinctive feature is that the sanctuary or *capilla mayor*, instead of terminating in an apse, is fully circular in plan and crowned by a lofty dome, under which, in a flood of light, stands the high altar.

Two other important examples of Renaissance **Cathedrals** are those of **Jaen** and **Valladolid**, while amongst the Gothic edifices that were embellished with magnificent Renaissance portals may be mentioned the **Cathedrals** of **Malaga** and **Salamanca** and the **Church of Santo Domingo** in the latter city and of **Santa Engracia** in **Saragossa.** Also of the Early Renaissance period are the octagonal lantern of **Burgos Cathedral**, designed by Vigarni, called de Borgoña, because he was born in Burgundy, famous as a sculptor even more than as an architect; and the towers of the **Cathedral del Pilar** and of **La Seo** in **Saragossa.** The last named, octagonal in plan and consisting of four stories, diminishing in size and crowned with a lantern, bears some resemblance to the English steeples of Wren.

Casa Lonja.—The most splendid Municipal building of Spain is the **Casa Lonja**, or Exchange for merchants, in

Seville, which was built in 1583–1598 by Diego de Riano from a design, not closely adhered to, by Juan de Herrera. The most highly decorated façade, which is on the side removed from the Square, shows a more than usual following of the Italian style in its system of pilasters and entablatures and the repetition and treatment of the windows. Yet the style is used with a decorative freedom, characteristically Spanish.

Thus the pilasters of the second story are of the baluster type, emulating, that is to say, the forms which can be obtained in wood by turning on a lathe; the ornament is lavishly expended over the whole front in a rich encrustation, and, as in the case of Salamanca, already alluded to, increases in boldness of relief toward the top. Moreover, the vivacity is enhanced by the intricate mitreing of the courses of the entablatures, broken round the projection of the pilasters. The handsome patio is double-storied, respectively in the Doric and Corinthian orders. The sumptuous marble staircase was added in the eighteenth century, during the reign of Charles III.

Classical Style.—Even while the plateresque style was flourishing a more direct invasion of Italian influence was in progress.

Palace of Charles V.—The earliest example of this is in the **Palace** which Charles V began to build on the hill of the Alhambra. The work was entrusted to Pedro Machucha, who, like Berruguete, his assistant in the design, had studied in Rome. The plan is a square, enclosing a circular court, and the style is Palladian. Each façade, measuring 207 feet in length and 53 in height, is composed of rusticated masonry and pilasters in the first story and, in the second, of an order of Ionic pilasters,

supporting a Doric cornice. In both stories occurs a mezzanine floor lighted by circular windows. The circular court, nearly one hundred feet in diameter, is surrounded by a lower and an upper open colonnade, respectively of the Doric and the Ionic order. A tribute exacted from the Moriscoes or survivors of the Moors, who were permitted to remain after the expulsion of the majority, defrayed the cost; but their insurrection in 1568 interfered with the work, which dragged on during Philip II's reign, until it was abandoned before completion. The roof was never built; nor the octagonal chapel, crowned with a dome which, at the northeast angle, was to dominate all the buildings of the Alhambra. The unfinished building further suffers from the competition of the Alhambra, which is the chief attraction to every visitor, so that insufficient justice has been done to the grandeur and dignity of the design.

The Escoriál.—Philip II's cessation of work upon his father's palace may have been largely due to his preoccupation with the memorial to his own memory—**the Escoriál.** By the terms of his inheritance he was bound to erect a mausoleum for his father. He enlarged the scheme to be a burial place also for himself and succeeding Catholic Kings and added a church, a monastery, and palace.

Situated thirty-one miles from Madrid and overlooking the intermediate landscape, this prodigious congeries of buildings occupies a rocky plateau that juts out from the precipitous side of the Guadarrama Sierra and is extended by immense foundations. Its plan, which tradition says was to reproduce the gridiron on which St. Lawrence suffered martyrdom, is a gigantic rectangle, 675 feet by 530, from which projects the handle, a small

rectangle. One enters on the mountain side, the Patio of the Kings. Along the right extends the monastery, terminating in the cloistered Patio of the Evangelists; while along the left is the College, terminating in the Palace. But the chief feature is in front of us, the vestibule of the church.

The latter is built over the mausoleum-crypt, in the form of a Greek cross, after the original plan of S. Peter's, Rome. Its Capilla Mayor adjoins the small projecting annex, which contained the private apartments of the royal family: the King's small, cell-like bedroom, commanding a view of the High Altar, so that, unseen, he could participate in the service of the Mass.

The work was begun by Juan de Bautista and continued by Juan de Herrera. But Philip himself perpetually supervised the design, which reflects his character not only in the ambitiousness of its dimensions but also in the grim plainness of the façades. Constructed of grey granite, cut in large blocks, they are composed of five stories, the windows of which are square headed, without dressing of any kind, and ranged in rows, without any attempt at grouping, so that the façades present a bare and barrack-like appearance. Meanwhile an effect of grandeur is produced by the immense scale of the whole mass, while the sky-line is rendered imposing by the towers, crowned with lanterns, which flank the façade of the church, and by the noble dome and lantern, built entirely of stone, on which rises in sequence a pyramid, a hollow ball, and a cross. The interior of the church, designed in the Doric order with flattish vaulting, is again of majestic scale and of extreme simplicity, which, however, is contradicted by the extravagant paintings on the ceilings. A feature of the church is the removal of the

coro from the floor to a gallery so that there is less interference than usual in a Spanish church with the impressiveness of space.

The severely classical style of the Escoriál was a reaction from the luxuriousness of the plateresque and the extravagance of the so-called "Grotesque Style," which Berruguete, a pupil of Michelangelo, introduced into his sculptural decorations. The absence of embellishment and reliance upon a strict use of the orders caused the classic style to be known as *Griego-Romano,* though, as a matter of fact, it was in nowise Greek.

Churrigueresque Style.—By the seventeenth century Spain, denuded of her foreign possessions by Holland and England and impoverished with war and corrupt government, had reached a condition of national exhaustion. In consequence no new buildings of importance were created, and such additions as were made to existing ones were chiefly in the nature of sculptural embellishments, which reflected the prevailing taste for the baroque. This, toward the end of the century, passed into the glaringly ostentatious and vulgarly meretricious Churrigueresque style, called after its principal perpetrator, the sculptor Churriguera.

FLEMISH AND HOLLAND RENAISSANCE TYPES

At the beginning of the sixteenth century the Netherlands, especially the southern provinces now comprised in Belgium, entered upon a period of enhanced commercial prosperity. Through their textile industries, their overland trade with Italy and the East, and their sea traffic with Cadiz and Lisbon, which tapped the trade routes to India and the New World, they had become the richest country in Europe. They were the favourite dominions

of Charles V, who was born in Brussels, and, while he allowed his "dear Netherlanders" municipal self-government, taxed them roundly for the privilege. It was inevitable that Netherlandish art should become affected by the Italian influence.

It showed itself first in painting: Mabuse, Floris, Van Orley being among those who sought inspiration in Rome, where Raphael's and Michelangelo's fame was supreme. One can picture the sensation in Brussels, in 1515 and 1516, while the former's cartoons for the Sistine Chapel were being executed in tapestry by Flemish weavers. Brussels shared the glory of the achievement and her artists and decorators may well have aspired to emulate the Italian manner. At any rate, it shortly began to appear in the decorative treatment of certain buildings: the superb chimney piece in the Council-Chamber of the **Palais de Justice**, in **Bruges** (1529); the façade of the gild-house of the Fishmongers in **Malines**, known as the **Salm** or **Salmon House** (1534), and the two courts of the Archbishop's Palace, now the **Palais de Justice**, in **Liège** (1533). These courts, attributed to François Borset, are surrounded by vaulted arcades, in which occur baluster columns, and capitals carved with grotesque masks and fantastic figurines and foliage—features that suggest a Spanish influence.

Then, about 1565, was built the **City Hall of Antwerp**, which represents the most imposing example of the Renaissance in Belgium. It corresponds to the importance which the city had now attained as the chief commercial emporium of the Netherlands. For the supremacy of Bruges was past: her harbours had been allowed to fill up with silt and in 1505 the Fuggers, merchant princes of Augsburg, removed their affairs to Antwerp, whither

the "factories" of the Hanseatic League soon followed. By the middle of the century a thousand foreign commercial firms were represented there; her great fairs attracted merchants from all parts of the world; the Scheldt was filled with shipping and over a hundred vessels are said to have passed in and out of her harbour daily. She surpassed in wealth and prosperity even Venice and Genoa.

The design is by the sculptor and architect, Cornelius de Vriendt, also known as Cornelius Floris. The principal façade, over three hundred feet long, consists of four stories; the first being of rusticated masonry, forming an open arcade; the second and third embellished with pilasters and entablatures, framing a regular repetition of mullioned windows, while the fourth comprises, as occasionally in Spain, an arcaded loggia, the shadowed effects of which correspond to those of an Italian cornice. The roof has a slight *curb* inward and is studded with two tiers of small dormers. The monotony of the façade is somewhat relieved by the projection in the centre. But, though this involves a change in the shape of the windows, there is a new kind of repetition, while above the third story the place of a dormer-gable is taken by an erection that has no structural significance and is merely a piling up of ornamental details to produce a colossal embellishment. It is instructive to compare this pavilion with the Pavillon de l'Horloge of the Louvre, which represents a logical as well as flexible and original application of the Palladian style. Compared with it De Vriendt's design exhibits a formality which suggests that it had been copied from some work in the Orders of Architecture, while the top part proclaims him a sculptor of florid taste, rather than an architect.

The best examples, however, of Flemish Renaissance are to be found in the gild houses and domestic buildings. Magnificent examples of the former are the **Houses** of the **Brewers, Tanners, Archers,** and **Cordeliers** or rope-makers, in **Antwerp,** and in **Brussels** those of the **Archers, Butchers, Carpenters,** and **Skippers;** the gable-end of the last-named representing the stern of a vessel with four protruding cannons.

Musée Plantin.—The most interesting example of domestic architecture is the **Musee Plantin-Moretus,** originally the home, office, and printing house of the great publisher, Charles Plantin, who obtained from Philip II a monopoly in the printing of breviaries and missals for the Netherlands and Spain. After his death the business was continued in the family of his son-in-law, Moretus; and the building which had been erected in 1549, received various additions down to the middle of the seventeenth century. Meanwhile the interior presents a complete picture of the combined residence and place of business of the period, since there are still preserved the wainscots, Spanish wall-leather, panelled ceilings, chimney-pieces, stained glass, and other furnishings, as well as the fittings of the various departments of the shop, devoted to composing, printing, proof-reading, binding, and display of goods.

Carillons.—An incidental feature of the Flemish Renaissance is the Carillon, or set of bells, tuned to the chromatic scale and connected with a manual keyboard, so that they can be played by hand. The most famous of these is in the Cathedral Tower of **Malines (Mechlin).** It comprises 45 bells, most of which were cast in the seventeenth century by the great bell-founder, Hemong, of Amsterdam. They surpass in volume and tone even the

famous chimes of the Belfry of Bruges, which were set up in 1743.

HOLLAND

The earliest Renaissance **City Hall** in Holland is that of **The Hague.** Erected in 1564, it exhibits the picturesque features of stepped gables and octagonal turrets that became characteristic of later examples, such as the **City Hall** at **Leyden** (1597) and the Renaissance addition made to that of **Haarlem** between 1620 and 1630. While the decorative details of the façade are of stone, the walls are constructed of red brick. This material is the distinctive feature of Holland domestic architecture, and the combination of its red, blue, or buff tints, weathered by time, with the green of foliage, reflected in the sleepy waters of the canals, gives a colourful picturesqueness to the quaint street fronts that is peculiarly fascinating.

Weighing Houses.—The best preserved buildings of the seventeenth century are to be found in the South at **Dordrecht** and **Delft,** and in the North in **Leyden, Haarlem, Alkmaar, Hoorn, Enkhuisen,** and, across the Zuyder Zee, in **Leuwarden, Bolsward, Zwolle,** and **Kampen.** Of particular interest are the **Waaghuisen,** or **Weighing Houses** for cheese, which are often of imposing size and richly decorated.

During the latter part of the seventeenth and the following century Holland architecture emulated the styles of Louis XIV and XV, though without the refinement of the French models.

CHAPTER VI

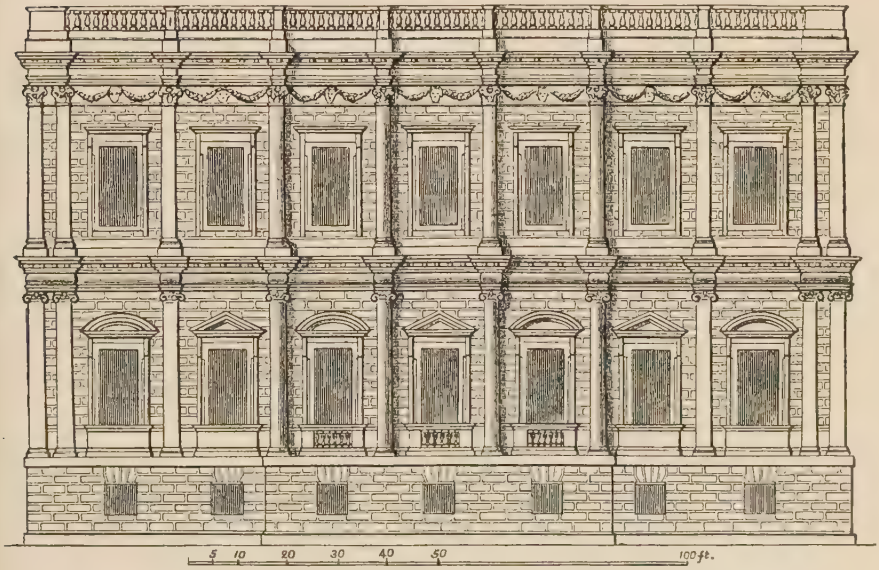
RENAISSANCE ARCHITECTURE IN ENGLAND AND AMERICAN COLONIAL ARCHITECTURE

Transition.—The direct effect of the Italian Renaissance did not reach English architecture until the seventeenth century, when Inigo Jones introduced the Palladian style. The so-called "Anglo-Classical" style which then ensued had been preceded by a period of transition from the Gothic, which is usually divided into "Elizabethan" and "Jacobean." These represent not so much styles as mannerisms. Just as, according to Shakespeare, the Englishman derived the fashion of his clothes from various foreign sources, so, at this time, he decked out what was left of the Gothic style with details borrowed from Italian, French, Netherland, and German models.

The debased form of Gothic, known as Perpendicular, involving the use of the low, four-centered arch, emphasising vertical and horizontal lines, and covering surfaces with mechanically repeated geometrical patterns, lingered on into the sixteenth century. But conditions in England were changing. The Wars of the Roses (1455–1485), waged by the nobles on one another, had completed the break up of the Feudal System. Castles were destroyed and the powerful families exterminated or represented mainly by minors. Statesmanship passed into the hands of an intellectual middle class whose power was advanced by the growing prosperity of trade and commerce.

WOLLATON HALL, NOTTINGHAMSHIRE

By Robert Smithson. Elizabethan Example of Gothic Combined with Renaissance. Note the German Influence in the Strapwork Gables. P. 412



BANQUETING HALL, WHITEHALL

By Inigo Jones. P. 418

HADDON HALL, DERBYSHIRE
GOTHIC EXTERIOR. P. 412

HADDON HALL. THE LONG GALLERY
ELIZABETHAN-JACOBEAN. P. 412

S. MARY-LE-BOW, CHEAPSIDE, LONDON

By Sir Christopher Wren. P. 423

S. PAUL'S CATHEDRAL, LONDON

By Sir Christopher Wren. P. 420

OLD CHARLTON, KENT

JACOBEAN, RED BRICK AND STONE FACINGS

GEORGIAN CHIMNEY PIECE AND OVERMANTEL

BY ROBERT ADAMS. P. 428

Italian Influence.—This was augmented, as the century advanced, by the foreign craftsmen who sought refuge in England from the religious persecutions in the Netherlands and the Huguenot war in France. They introduced not only superior skill of workmanship, but the French, Dutch, and Flemish modes. Meanwhile Henry VIII, in surrounding himself with a new kind of political advisers, had also welcomed foreign artists to his court. Among them were Holbein, a versatile designer in various mediums as well as a great portrait painter; Torrigiano, who executed **Henry VII's Tomb** in **Westminster Abbey** (1512); Giovanni da Majano, who modelled the busts of the emperors in the terra-cotta medallions over the entrance-gates of Hampton Court; Benedetto da Rovezzano, designer of the Tomb of Cardinal Wolsey, which has perished, and a certain John of Padua, who is supposed to have been the architect of **Longleat House** in **Wiltshire.**

Henry's partiality for Italian artists may well have been inspired by the example of Francis I, whom he met in 1520 on the celebrated "Field of the Cloth of Gold." At any rate there are many examples of sculpture, dating from the first half of the sixteenth century, represented in tombs, choir-screens, and organ-screens, which were purely Italian in their decorative design and of marked refinement. Terra-cotta enrichments, of similarly pure Italian craftsmanship, are to be seen in certain specimens of domestic architecture, such as **Sutton Place,** near **Guildford,** Surrey, and the entrance tower of **Layer Marney, Essex,** both of which were completed in 1525.

The suppression of the monasteries, 1536–1540, resulted in a revival of architecture, for in many cases the

buildings were bestowed upon laymen who converted them into mansions, while a large part of the Church funds was devoted by Henry VIII and Edward VI to the erection and endowment of Grammar Schools.

ELIZABETHAN AND JACOBEAN PERIODS

Under Elizabeth England reached a hitherto unexampled prosperity and the period is one of country-house building, in which especial attention began to be paid to the allied art of landscape gardening. Among the most famous are: **Burghley House** and **Kirby Hall, Northamptonshire; Knoll** and **Penshurst**, in **Kent; Charlecote, Warwickshire; Longleat House** and **Longford Castle, Wiltshire; Wollaton, Nottinghamshire,** and **Haddon Hall, Derbyshire.**

Some of the mansions built during the reign of James I, the so-called "Jacobean Period," are **Holland House, Kensington; Bolsover Castle, Derbyshire; Old Charlecote House, Kent; Audley End, Essex; Hatfield, Hertfordshire; Ham House, Surrey; Bramshill, Hampshire; Bickling Hall, Norfolk;** and **Aston Hall, Birmingham,** which was completed in the following reign.

The houses mentioned in both these lists are constructed of stone or brick; but timber construction was still employed, especially in Cheshire, Lancashire, and Shropshire. To these periods also belong the following Colleges. In Cambridge: **The Gate of Honour, Caius; Emmanuel;** the courts of **Sidney Sussex** and **St. John's;** the quadrangle, **Clare,** and **Nevill Court, Trinity.** In Oxford, **Jesus, Wadham, Pembroke, Merton Library,** and the **Gateway of the Schools,** now the **Bodleian Library.**

It is of little advantage to try to distinguish between

the Elizabethan and the Jacobean period. Both represent a progression from the Gothic in the direction chiefly of superior conditions of comfortable living; but they retain many of the Gothic characteristics, while the modifications, more or less Renaissance, are in the manner of embellishments, and applied not according to any structural principles but as opportunities of imitation were available.

Books of Design.—There were books on the use of Classic Orders. The first to reach England was the work of the Italian Serlio, who had become domiciled in France. In 1567, John Shute, a painter and architect, who had been sent to Italy by the Duke of Northumberland, brought out his "Chief Groundes of Architecture," the first work of its kind published in England. In 1577 appeared the pattern book of Vredeman de Vries of Antwerp, representing Italian details, debased by Flemish and German ingenuity, which was responsible especially for the prevalence of *strap-ornament,* that is to say, geometric designs of flat bands, studded with knobs, as if they were metal or leather work, attached to the wall by rivets.

The decorative inspiration, therefore, was purer at the beginning than in its subsequent development. For example, the decorative use of the orders is better in some of the earlier buildings than the later ones. In fact, what chiefly distinguishes the Jacobean from the Elizabethan is an increasing grossness of detail, apparent in the furniture and fittings, as well as in the embellishment of the exteriors.

Architect's Function.—These conditions were fostered by the circumstances under which the building was conducted. There were architects whose names sur-

vive, the earliest being John Thorpe, the designer of Kirby, Burghley, Longford Castle, and Holland House. But the custom of the time seems to have limited the architect's function to the supplying of a plan and design; probably more in the nature of a sketch than of actual detailed drawings, after which the building was handed over to the sole control of a master-mason, who worked out his details from the pattern book. Naturally, such a divorce of construction and design was little likely to result in the consistent development of an architectural style.

Plans.—The square plan was retained from Gothic times in the case of colleges and in some mansions. But usually, to secure more air and light the fourth side was dispensed with, the gate-house, which had been its central feature, becoming a separate building. And the tendency was to prolong one side and shorten the wings, so as to produce the E plan, or to lengthen the wings by projecting them on each side of the main façade, thus forming a letter H. Or the wings are replaced by outlying pavilions joined to the main building by corridors. Sometimes the plans are irregular, representing the additions made to an original Gothic house.

Roofs.—Many Gothic features were preserved. Oriel and bay windows were frequent, and the windows retain their mullions and transoms, and increase in size, being often carried up through several stories. Square or octagonal towers abound, occasionally battlemented but generally finishing in a parapet or cresting, the roof being concealed or rising in a low cone or pyramid. Similarly, the main roofs vary; high, flat, and low ones even occurring in the same design. They are covered with lead or tiles, and surrounded by balustrades, formed of battle-

ments, successive arches, or pierced ornament. Gables are edged with scroll-work, while dormer-gables, as in the Netherlands and Germany, are stepped or carried up with variously curved outlines. The chimneys, single or grouped in stacks, continue to be a prominent feature, their decoration, occasionally, as at Kirby and Hatfield, involving a use of orders.

Use of Orders.—The orders when applied to the façade, are treated with little regard to purity of style and are often disfigured with strap ornament. When used in interior decoration, the pilasters frequently diminish in width toward the base, or swell out in bulbous curves; there being little or no limit to the extravagance of form that columns and pilasters alike assume in chimney-pieces and furniture. Indeed, during the Jacobean period the grotesqueness of ornament notably increased, accompanied by a corresponding coarseness in the modelling. Moreover, this characteristic invaded the gardens, where trees and hedges were trimmed or "pleached" into the shape of birds, or beasts, or fantastic designs.

However, although the mansions of the Elizabethan and Jacobean periods will not stand scrutiny on the score of architectural propriety, they have besides their picturesqueness a quality that is aptly characterised in Cowper's phrase, "the stately homes of England." They possess dignity and, above all, are homelike. They bear the stamp, not of the professional architect, but of the variegated family life that they have fostered for successive generations.

Interiors.—And this is equally true of the interiors. Comfort is not sacrificed to stateliness. The chief apartments may attain grand proportions, but they do not give the impression of being reserved for merely cere-

monial purposes; they are centres of domestic life. The Gothic feature of the Great Hall was preserved; and, in the early examples, while the family and the retainers still took their meals together, a dais occupied one end, the opposite end being separated from the buttery or larder, and the kitchen by a richly decorated wooden screen, above which was the minstrel gallery. The conspicuous feature of the hall was the fireplace, with a chimneypiece on which the most elaborate decoration was lavished, the rest of the walls being panelled in wood to a height of eight or ten feet, leaving a space above for trophies of the chase or family portraits. This type of hall is still retained in all the dining halls of the Oxford and Cambridge colleges.

Adjoining the hall was a *solar* for the intimate life of the family. Gradually, as the taste for privacy increased, a separate room was used for dining and other living-rooms were added until the hall came to be more and more an entrance hall, and the main living apartments were disposed as in Italian and French custom, on the second floor. This caused the staircase to be treated as a prominent feature, which, as it were, prolonged the spaciousness of the hall. Occasionally of marble or stone, it was usually constructed of oak with massive newel-posts and balustrade, richly decorated.

In the earlier examples, and even in some later ones, as Inigo Jones's design of **Chevening House**, the apartments are arranged on the "thoroughfare" system, opening into one another en suite. But the inconvenience of this in the entertaining of guests led to the adoption of a corridor along one side. By degrees this was widened and developed into what is the most distinctive feature of these old English houses—the Long Gallery. Lit with

tall windows, often with deep bays that form attractive alcoves, it served as a pleasant sitting-room and equally as a place for exercise in wet weather, while its inner wall provided space for pictures. In fact, this room seems to have been the origin of the term "*picture gallery.*"

Special care was bestowed upon the ceilings. Occasionally the beams were exposed, but the usual practice by this time was to sheathe them with lath and plaster, the surface of which was decorated with stucco relief in geometrical designs. At times the flat of the ceiling was connected with the walls by a concave member, called a *cove.* Often, when the wainscot was not carried up to the level of this, the upper part or dado also was decorated with stucco relief.

It is characteristic of the use of the pattern books that the motives of decoration employed in the exterior and interior embellishment are used also in the furniture of the period, which on the whole is distinguished by its massiveness, exuberance of ornament, and the mechanical method of the workmanship. For much of the ornament is either cut out of the flat wood with a jig-saw or carved upon forms that have been turned upon a lathe.

ANGLO-ITALIAN PERIOD

With the accession of Charles I commenced an era of more refined and cultivated taste. The King, as a young man, escorted by the pleasure-loving Duke of Buckingham, had visited the Court of Spain in search of a wife, and had seen the wonderful array of Titians and Rubens's in the Royal Gallery. Later he had married Henrietta Maria, daughter of Henri IV, who, under the inspiration of his wife, Marie de' Medici, was introducing the classical style into French architecture.

Inigo Jones.—Charles himself had planned to erect a palace at Whitehall that should surpass the Louvre in grandeur and found in Inigo Jones (1573–1652) an architect fully qualified for the ambitious enterprise. He had made a prolonged study of the Renaissance style in Italy, spending much of the time in Vicenza, where he had become an ardent admirer of Palladio's work.

Whitehall Palace.—His plan of **Whitehall Palace** provided for an immense rectangle, 1152 by 720 feet, surrounded by façades, three stories high. The interior court was to be divided into three parts by two wings of two stories, which were to be united to the main side-façades by transverse wings, so that the plan would have embraced a large court and six smaller courts, one being circular in plan. However, a scheme of such magnificence was entirely beyond the King's means and the only part erected was a small portion of one of the interior wings—the **Banqueting House**, which now abuts on the street that retains the name, Whitehall.

The façade that it presents to the latter is in the Paladian style and of extreme purity. Constructed throughout of fine, rusticated masonry, it consists, above the basement, of two stories, decorated, respectively, with the Ionic and the Corinthian orders, while a well-proportioned cornice, surmounted by a balustrade, defines the sky-line. An admirable feature, apparently originated by Inigo Jones, for it is not found in Italy, is the slight prominence given to the central three window bays by substituting columns for pilasters and breaking the entablature and cornice round them. The interior contains a handsome vaulted hall, divided into three aisles.

Another design by Jones, which recalls Palladio's Vicenza gates is the **Water Gate**, now in the **Embankment**

Gardens, which formerly was the water entrance from the river to old York House, which has been destroyed. He also built **S. Paul, Covent Garden** (1638), a severe but imposing design that suffers from its proximity to the market, the arcades of which are also his. His design for the river façade for **Greenwich Hospital,** in which the two lower stories are included in one colossal Corinthian order, was executed by his pupil, John Webb. Among the examples of Jones's domestic buildings are **Raynham Hall, Norfolk; Wilton House, Wiltshire; Chevening House, Kent; Stoke Park, Northamptonshire,** and **Coleshill, Berkshire.**

But the erection of country houses and indeed all architectural activity were seriously interrupted by the Civil War and the consequent unsettled conditions.

Wren.—More fortunate in opportunity was Sir Christopher Wren (1632–1723), upon whom it devolved to repair some of the damage wrought by the Great Fire of London, in 1666. He was never in Italy and his foreign experience was limited to six months in Paris, where Bernini's design for the Louvre, fortunately never executed, was being commenced. Consequently he did not possess the technical equipment of Inigo Jones and was not always successful in the decorative sheathing which he applied to the construction. It was on the constructive side that his genius lay and in this he was assisted by his previous career as a mathematician and professor of astronomy at Gresham College and the University of Oxford.

Wren's earliest architectural works, executed before he went to Paris, were the **Library of Pembroke College, Cambridge** and the **Sheldonian Theatre, Oxford.** His scientific knowledge was demonstrated in the ceiling of

the latter, which has a span of 68 feet. After the fire of London he planned to lay out the devastated part of the city on new and broader lines; but the reconstruction was defeated, as city replanning is liable to be in our own day, by the opposition of property owners. Meanwhile a plan he had previously made for the enlargement of S. Paul's was now superseded by the necessity of erecting an entirely new building.

S. Paul's.—The plan of S. Paul's is a cross with short arms; both the choir and nave, comprising three bays, flanked, like the transepts, with aisles. The choir terminates in a small apse; the transepts in semi-circular porticoes and the west end in a vestibule with lateral chapels.

The internal piers are embellished with Corinthian pilasters, supporting an entablature and attic, the latter containing clerestory windows, which, however, though giving light to the interior, are not visible from outside. The ceilings, throughout, are composed of repetitions of flat, saucer-like domes.

But the dominant feature of the interior is the octagon at the crossing, which comprises the width not only of the nave and choir but also of the aisles. It permits four great arches, opening into the nave, choir, and transepts, and four smaller and lower arches, connecting with the ambulatory, which is formed by the aisles. This arrangement is somewhat similar to the octagon of Ely Cathedral and may be compared with the plan of the dome of the Invalides.

Surmounting the eight pendentives of St. Paul's is a circular gallery, known as the "Whispering Gallery," above which rises a circular peristyle. The latter's entablature supports the interior dome, which mounts to a height of 281 feet from the floor.

In recent years the barrenness of the interior has been considerably relieved by glass mosaic decorations, designed by Sir William Richmond.

The Façades comprise two stories; the lower embellished with the Corinthian order, the upper with the Composite; the line of division being at the height of the aisles. Thus, on the north and south sides of the building, the upper part of the façade is only a screen, carried up for the purpose of composing with the mass of the dome. The flying buttresses of the latter are concealed behind it, while light penetrates through it to the clerestory windows. Admirable features of the lower story of the side façades are the semi-circular porticoes, of beautiful design, which project from the ends of the transepts. Excellently proportioned, if somewhat bald, is the west façade, which is a double storied portico of coupled columns, supporting a pediment. This is flanked by two towers, which rise above the sky-line in diminishing stories, terminating in bell-shaped cupolas. Not only are they fine compositions in themselves, but they are also designed in fine relation to the dominating feature of the dome.

The Dome.—The latter, in mass and outline and in the relation achieved between its several parts, can lay claim to being the most majestic dome of the Renaissance. Among the elements that enter into its impressiveness is the emphasis given to the lowest course of masonry, which well suggests the union of the nave, choir, and transepts and forms a substantial stylobate to the peristyle. The latter, again, is exceptionally fine in proportion. In appearance, relatively higher than that of S. Peter's and related with more freedom to the mass above, it is formed of coupled columns attached to radiating but-

tress walls; every fourth space between the columns being filled with solid masonry, which is relieved in the way of light and shadow by a decorated niche. The effect is at once strong, stately, and of airy lightness. Very fine also, in its peculiar accent of effectiveness is the proportion of the upper drum to the superincumbent mass of the dome, whose curve is lifted to a culminating springiness by the height and freedom and sensitive proportions of the lantern.

No less remarkable is the scientific knowledge expended in the construction of this externally superb masterpiece. It is composed, like the domes of the Invalides and the Panthéon in Paris, of three shells, although the arrangement is different. For the intermediate shell consists of a cone of brickwork, 18 inches thick. It springs from behind the upper drum, and on it bears the stone lantern, ball, and cross; the last being 365 feet above the ground level. It also helps to bear the weight of the timber supports of the outer shell, which is constructed entirely of wood, sheathed with lead. The inner dome, resting on the peristyle, is of brickwork, and of the same thickness as the cone.

Wren's Churches.—Between the years 1670 and 1711 were erected some fifty-three London churches, in which Wren displayed remarkable versatility in adapting Renaissance design, not only to the different conditions which the crowded site involved but also to the requirements of Protestant worship, which laid so much stress on preaching and needed chiefly an auditorium. A famous example is that of **S. Stephen's Walbrook,** in which sixteen columns support a coffered ceiling, interrupted by a pendentive dome. This is the predominating feature, for its diameter is 43 feet in a total width of 60 feet.

Wren's churches, however, are better and more characteristically known by the variety of steeples, which may be considered an invention of his own. From a square tower, which is treated as the main feature of the front façade, they pass into circular or octagonal stories, diminishing in diameter, clothed with Renaissance details, and terminating in a slender spire. Their beauty consists in the variety and proportions given to the several parts, achieving an ensemble of peculiar elegance. Occasionally they suggest a certain mechanicalness of repetition; hence the example which is considered the best is that of **S. Mary-le-Bow.** For here the repetition of the orders is interrupted by a story composed of inverted consoles, the effect of which is to vary not only the character of the embellishment, but also, by introducing the contrast of a curve, the regularity of successive steps. Wren's inexhaustible activity is represented also, among many other examples, by the **Monument** at **London Bridge**; **The Fountain Court** and **Garden Façade** of **Hampton Court**; **Chelsea Hospital**; **Marlborough House, Pall Mall**; and **Temple Bar.** The last, forming the entrance gate to the City of London proper, has been removed from its old site at the foot of Fleet Street, and set up in Theobald's Park, Northamptonshire.

He lies buried beneath the choir of his masterpiece, a tablet bidding you, "Si monumentum requiris, circumspice."

Hawksmoor, Gibbs.—The most notable of Wren's pupils were Nicholas Hawksmoor (1666–1763) and James Gibbs (1683–1754). The latter published a book of his own designs, which, as we shall see, exercised a considerable influence on the beginnings of architecture in the American Colonies.

EIGHTEENTH CENTURY STYLES

ANGLO-CLASSICAL. QUEEN ANNE. GEORGIAN

This period comprises the reigns of Anne (1702–14) and of the three Georges (1714–1820). In the case of large mansions it represents a continuation of the "Anglo-Palladian" style, with an increased importance given to the use of columns, especially in porticoes. Hence it is sometimes called the "Anglo-Classical," or more specifically, the "Portico Style."

In less pretentious houses the tendency was to avoid columns and ornamental details and to rely upon the sterling character of plain brick work. The so-called *Flemish bond* was introduced, a method of binding a wall into solidity by laying the bricks in courses of alternate *stretchers* and *headers*—bricks, that is to say, laid, respectively lengthwise with and at right angles to the outer surface of the walls. It differed from the *English bond,* in which stretchers and headers were laid in alternate courses. A single projecting string course might mark the division of the stories, while several, projecting one over the other, would form a cornice under the eaves of the tiled roof. Or this arrangement might be replaced by a wooden cornice. Windows, owing to the tax upon them, were reduced in number and often increased in size, especially in the direction of height. Correspondingly, doors were heightened until they had an effect of narrowness. In all these particulars, as also in the introduction of pediment-shaped gables and wooden cornices under the eaves of the tiled roofs, there was a disposition to follow the seventeenth century type of Dutch and Flemish domestic architecture. This so-called "Queen Anne" style—though it is more a manner than a style—involved a cer-

tain primness of effect, quite in keeping with the somewhat pedantic attitude of the time, but is characterised by simple refinement and suggestion of comfortable domesticity.

By the time of George III—1760 and onward—certain modifications were introduced into the Anglo-Classical style, which are sometimes characterised by the distinction, "Georgian."

Anglo-Classical.—The Anglo-Classical is frankly a style of ostentation and magnificent pretension. So far as one man could be responsible for what was in effect an expression of the temper of an age that was amassing great wealth in the Indian and Chinese trade, the man was Sir John Vanbrugh. But it is significant that he first became famous as a writer of witty and spicy comedies. Then he "turned his attention to" architecture and wrote to his friend Tonson, the publisher, for a "Palladio." With the aid of this he qualified himself as an architectural designer and having already gained the favour of society by his talents as a wit was readily accepted as an architect, enjoying particularly the patronage of Queen Anne, who sent him abroad on a special mission. His first important mansion was **Castle Howard** (1714), followed a year later by **Blenheim Palace.**

In both of these he achieved what may be described as a scenic impressiveness on a prodigious scale, but without much reference to architectural logic or to internal convenience. The two plans have a general similarity, consisting of a main block with an extensive garden front, connected at the rear by two corridors with the kitchen block and the stable block. These flank a great court, which at Blenheim is closed by a screen wall

and gateway in the manner of a French château. The kitchen at Blenheim was some 400 feet distant from the dining room! Windows in both designs were disposed for exterior effect and not for proper lighting of the interior. In numberless particulars internal convenience was sacrificed to palatial planning and display. As Voltaire said, if the rooms had been as wide as the walls were thick the palace would have been passably convenient. Amongst the new features, introduced by Vanbrugh, was the converting of the ground story into a kind of mimic cellar, with inconveniently small staircases to the floor above, the main approach to which was on the outside of the building, by a grand flight of steps leading up to a superb portico.

Notwithstanding the magnificence of scale, these designs have a chill formality that makes their dignity rather dull.

Meanwhile they set a fashion exactly suited to the taste of the time, which in literature also was disposed to substitute dilettantism for culture, and, in its infatuation for what it called "style," to attach more importance to form than to subject-matter. It was the age of the amateur. Lord Burlington, for example, a patron of art, designed a villa at Chiswick in a free translation of the Villa Capra, Vicenza by Palladio. Also, in conjunction with his protégé, Kent, he erected the **Horse Guards** and **Devonshire House** in London and **Holkham Hall, Norfolk;** the last-named presenting a central block connected by corridors with four outlying pavilions. One of the shibboleths of this time that passed for a principle was that to a style of this grandeur only one form of roof was appropriate—a dome. Interior proprieties were sacrificed to the securing of a dome, and where the exigencies

of building necessitated a flat or pointed roof it was hidden behind an attic or balustrade.

Pope's Satire.—The fatuities, however, of this craze for the monumental did not escape contemporary satire. When Lord Burlington published the designs of Inigo Jones and Palladio's drawings of the "Antiquities of Rome," Pope referred to them in one of his epistles—

> "You show us, Rome was glorious, not profuse,
> And pompous buildings once were things of use.
> Yet shall, my Lord, your just, your noble rules,
> Fill half the land with imitating fools;
> Who random drawings from your sheets may take
> And of one beauty many blunders make;
> Load some vain church with old theatric state,
> Turn arcs of triumph to a garden gate:
> . . . . . " 'tis very fine,
> But where d'ye sleep or where d'ye dine?
> I find by all you have been telling
> That 'tis a house, but not a dwelling."

Chambers.—It was a reaction from this mania for magnificence that encouraged, in the case of more modest houses, the so-called "Queen Anne" style, and later, in large and small alike, the "Georgian." The change to the latter, moreover, was assisted by the influence of Sir William Chambers, who acquired a real knowledge of architecture through long study in Italy and in 1759 published his "Treatise on Civil Architecture." His most important work is the river front of **Somerset House.** He, too, however, was responsible for a craze. In early life he had visited China, where he made sketches of architecture, furniture, and costumes, which formed the basis of his "Designs for Chinese Architecture, Etc." published in 1757. It led to an infatuation for the so-

called "Chinese Style" which survives directly in the Pagoda at Kew Gardens and indirectly in the Chinese motives that Chippendale (d. 1779) introduced with so much taste into his furniture designs.

Adam.—Meanwhile, the Georgian revival was due even more to the genius of the Scotsman Robert Adam (1728–1792). Realising that the existing knowledge of Roman architecture had been derived from public buildings, he visited the only example known then of domestic architecture, the ruins of Diocletian's Palace at Spalato in Dalmatia. Here in co-operation with the French architect, C. L. Clerisseau, and two experienced draughtsmen, he made the measurements and drawings out of which he projected a restoration of the building in a fine work entitled "The Ruins of the Palace of Diocletian" (1764). To him belongs the credit of inaugurating the modern idea, not yet sufficiently lived up to, of using the monumental style for a number of separate buildings, grouped in one design. His first achievement was on the banks of the Thames just east of Buckingham Street, where the steep descent necessitated a system of vaulted foundations that are said to be a remarkable example of engineering skill. On this Adam erected the dignified design, which, since his brother James co-operated with him, was called after the Greek word *adelphoi,* brothers, **Adelphi Terrace.** Other instances of his group designs are parts of **Fitzroy Square,** the older portion of **Finsbury Circus** and **Portland Place.** Among his country houses is **Keddleston Hall, Derbyshire.** Here he clung to the sprawling plan, in which the offices are widely parted from the main block; but, in the façades, employed large windows, finely grouped, and permitted the sloping roofs to be a strong feature of the design.

HOME OF THE POET LONGFELLOW, CAMBRIDGE, MASS.
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CHRIST CHURCH, PHILADELPHIA
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WASHINGTON'S HOME AT MOUNT VERNON

REAR VIEW. EXAMPLE OF SOUTHERN COLONIAL. P. 432

ANOTHER SOUTHERN COLONIAL EXAMPLE, MONTGOMERY, ALABAMA

P. 432

It was Adam's idea that the architect should be responsible also for the interior decorations and furniture, thus making each room and its furnishings a unified design. Indeed, that everything outside as well as inside the house, summer-houses, terraces and so-forth, should unite in a single ensemble. In the style of furniture that has been associated with his name he showed a rare taste in blending classical motives with elements of his own fancy; exhibiting a particular skill in the graceful use of curvilinear forms, in which he had a partiality for ovals, and in modelling details that, while very delicate, were neither weak nor petty. As the result of his influence the Georgian interior presented an appropriately dainty setting to the costumes and manners of society, which had abandoned the stiff ostentation of the earlier Georgian period for the graceful elegance of the later mode.

AMERICAN COLONIAL ARCHITECTURE

Naturally it was from the Mother-Country that the American Colonies derived the models of their earliest architecture. The date at which increased population and prosperity encouraged buildings of a more permanent character, distinguished by their appearance as well as by their immediate utility, is placed at about 1725. From this time the rigour of life in New England, and particularly in Massachusetts, began to be considerably abated. The theocratic form of government, in which the clergy were the arbiters of moral and social conventions, had given way to the active participation of laymen in public affairs. The manners as well as the costumes of society became elegant and the pleasures of life were no longer frowned upon. The change which thus

came over social life is reflected in the contrast presented by Copley's portraits and those of his predecessor, Smibert.

A corresponding advance in the amenities of life was represented also in New York and Philadelphia; while, as to the Southern States, which had been colonised by Royalists rather than by Puritans, the tradition of elegant life had always been maintained and the change at this period was only in the increased opportunity of realising it.

English Influences, Modified.—The edifices which began to be erected comprise churches and meeting-houses, mansions, and a few public halls; the last being of historical rather than architectural interest. The places of worship represent an adaptation of the Wren-Gibbs type, while the domestic designs are based on Queen Anne and Georgian styles. In a few cases the prototype was fairly reproduced; notable examples being **Christ Church, Philadelphia** (1727–35); **Old South Church, Boston,** now used as a museum (1730–82), and **S. Paul's, New York** (1766). The last named is one of the few instances of stone building at this period; the usual material being either brick imported from England or, far more usually, wood. This affected the use which was made of the drawings of Gibbs, Adam, and others, from which the Colonial church-builders derived their designs. Brick did not permit of carved enrichment. Mouldings were, in consequence, of extreme simplicity and such embellishments as columns, pediments, and cornices were constructed of wood. The character of the design was still further modified in the New England States, since wood was used also for the main structure.

Colonial Style Developed.—Thus there was developed a skill of design in the use of wood alone and of wood in combination with brick that is distinguishable as a distinct style, to which the term "Colonial" has been applied. It is a style in no sense monumental, even when it includes spires, columns and porticoes. On the contrary, it is characterised by simplicity and reserve but is saved from insignificance by the quiet dignity of the whole and the refinement of the details. The wooden spires of the innumerable meeting-houses distributed over New England, many of which were designed by the almost forgotten worthies, Ascher Benjamin and Ithiel Town, present a type of their own, distinguished by extreme sensitiveness of outline and aspiring grace and airiness. These are veritable creations, growing logically out of the wood construction. And even in the porticoes, although their columns are structurally shams, being mere shells enclosing a post, the feeling of woodwork is so frankly retained, that in association with the wooden walls they seem quite reasonable.

A corresponding unity of effect is achieved in the best examples of wooden domestic buildings, such as the **Craigie House**, Longfellow's home in **Cambridge**; the **Sherburn House, Portsmouth**, and innumerable other examples throughout New England. They are characterised by the choice proportions and distribution of the windows, by the pilasters running up through two stories, to a well-designed cornice, broken in the centre by a pediment that serves as a porch. The roofs vary. Some are flat; some slope up from front and rear, with a gable at each end. In other cases, the continuous slope is broken by a *gambrel* into two slopes, forming an obtuse angle, as in the Mansard roof. While again,

the roof may be *hipped,* sloping up, that is to say, from all four sides, the four planes meeting in hips or ridges.

While similar styles of roofs and windows reappear in the Southern Colonial type of house the latter is distinguished by the addition of a verandah. It may take the form of a pedimented portico, composed of colossal columns, carried up to the cornice, or of a colonnade extending along the entire front and frequently consisting of two stories; the floor beams of the upper one being let into the columns—a device that violates structural propriety but may be overlooked in the comfortable dignity of the whole design. The latter in some cases covers an extended, symmetrical plan, as, for example, in Washington's home, **Mount Vernon,** where the main block is connected by curving colonnades with the kitchen wing on one side and offices on the other, while the slave-quarters were in detached buildings, separated by formal gardens from the mansion. The comparative smallness of the latter emphasises the suggestion of the patriarchal character of the best of the old Southern life before the Civil War, while the quiet dignity of the exterior is repeated in the spirit of refined and gentle breeding that pervades the interior.

Both in Southern and Northern Colonial houses the wainscots, door- and window-trims, the mantelpieces, cornices, and balustraded staircases exhibit a choiceness of design, derived from the models of Adam and Sheraton.

BOOK VII

POST-RENAISSANCE PERIOD

CHAPTER I

CLASSICAL AND GOTHIC REVIVALS

In the latter half of the eighteenth century commenced a Classical Revival, which in the various countries that it affected lasted far on into the nineteenth. In some directions it represented a reaction from the debased Renaissance styles of the baroque and rococo; in all it was largely promoted by a more accurate study of antiquities and by the discovery of the distinction between Greek and Roman art. Its effect upon architecture was but one phase of its influence, which penetrated more or less the thought of the world and found expression in literature. This revival belongs rather to a history of architecture than to a study of fundamentals, such as this book has attempted. Accordingly we must be satisfied here with a brief sketch of the subjects. To continue the thread of the previous chapter let us start with the appearance of the classical revival in Great Britain.

CLASSICAL REVIVAL IN GREAT BRITAIN

English Exploration.—The "Revival of Learning" had been followed in England by a continuous fondness for Greek and Roman literature. Milton, as late as 1654, was writing his political tracts in Latin; and, although such use of the language was abandoned, a familiarity with Latin and at least some acquaintance with Greek continued through the rest of this century and the following one to be the ordinary mark of an educated gentleman. In 1647 Dryden popularised the Æneid of

Virgil by translating it, and in 1720 Pope produced his translation of Homer's Iliad. For the promotion of arts and letters the Dilettanti Society was founded in 1734; and some twenty years later financed the archæological exploration of Stuart and Revett in Greece. Their work, "Antiquities of Athens," was published in 1762. One of the results of the interest it created was the acquisition through Lord Elgin of the bulk of the sculpture of the Parthenon and a caryatid and column from the Erechtheion which were purchased by the Government (1801–1803). These in turn prompted the researches of the architect, H. W. Inwood, who published in 1831 his study of the "Erechtheion."

Winckelmann's Critical Studies.—Meanwhile in Germany Winckelmann had given to the world in 1763, practically at the same time as the appearance of the work of Stuart and Revett, his famous "History of Art." The product of thirteen years of study of the antique sculptures in Rome, by one who was a profound classical scholar as well as a man of remarkable independence and extraordinary critical faculty, this work, for the first time, made exact distinction between Greek and Roman examples, established a basis of sound criticism, and analysed the characteristic quality of Greek art. This Winckelmann found to consist in a relation between the whole and the parts, so completely harmonious and so balanced and controlled by refined feeling that, if one quality can be selected as typical of Greek work, it is *repose.*

The influence of Winckelmann's work and that of Stuart and Revett was reciprocal in the two countries. But that the functions of Greek sculpture and Greek architecture were also reciprocal escaped observation. Even

LA MADELEINE, PARIS

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ST. GEORGE'S HALL, LIVERPOOL

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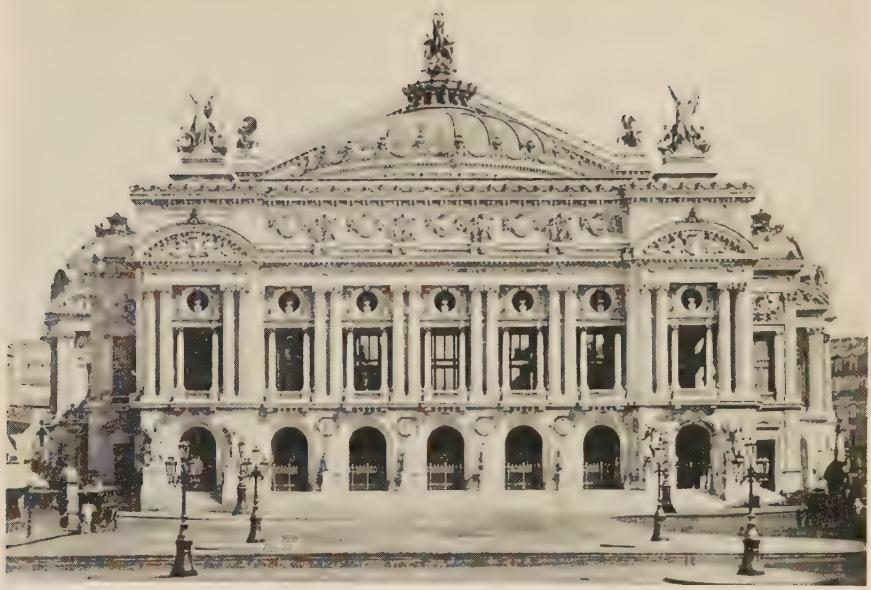
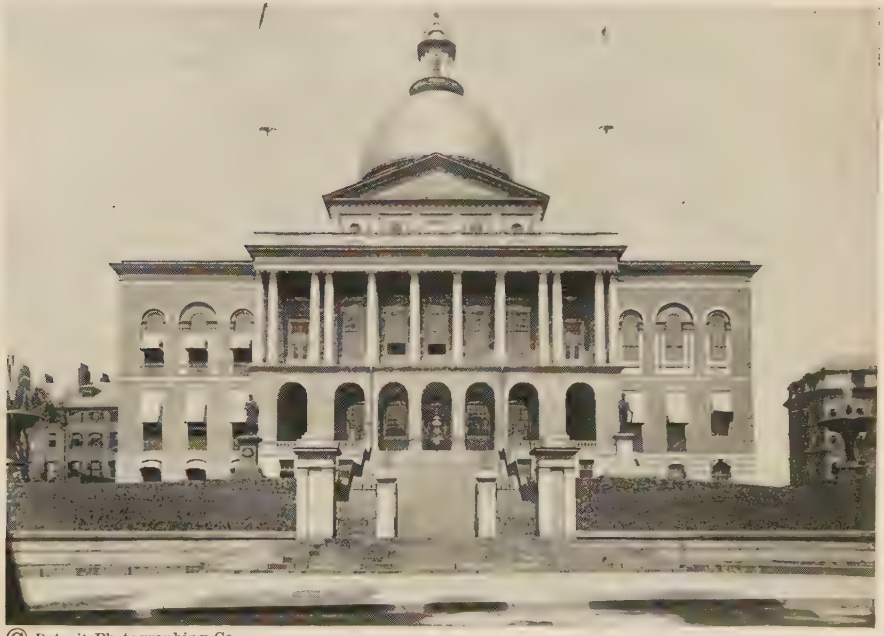
PANTHEON, PARIS
By J. J. Soufflot. P. 442

ARC DE L'ETOILE, PARIS
P. 443



OPERA HOUSE, PARIS

By Charles Garnier. P. 444



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STATE HOUSE, BOSTON

By Charles Bulfinch. P. 448

CAPITOL AT WASHINGTON

Original Central Portion by William Thornton, Advised by B. H. Latrobe and Charles Bulfinch. Wings and Dome Added 1851 to 1865

CITY HALL, NEW YORK

By Mangin. Louis XVI Style. P. 448

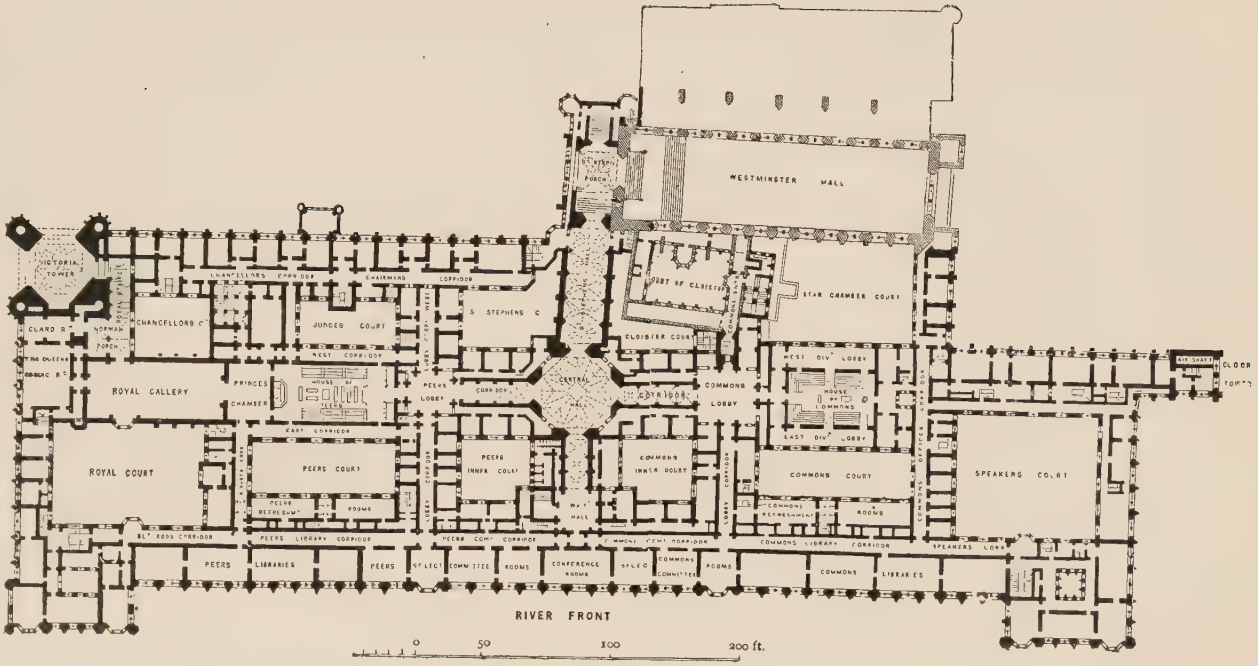
Courtesy Bertram Grosvenor Goodhue

ST. THOMAS, NEW YORK

By Cram, Goodhue and Ferguson. P. 453

HOUSES OF PARLIAMENT

By Sir Charles Barry and Augustus W. N. Pugin. Victoria Tower, Left; Clock Tower, Right. In the Distance, Left, Westminster Abbey. P. 450



PLAN OF THE HOUSES OF PARLIAMENT

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more than the combination of architecture and sculpture in a Gothic cathedral, because more deliberately, as a result of reasoned logic as well as of feeling, Greek sculpture and architecture were constituent parts of one design. To divorce the architecture from its sculptural enrichments, is to reduce the temperature of feeling in a building, to make it cold and too severe in its refinement. Moreover, the exterior design of a Greek building was so calculated to its plan, which was usually that of a temple, that to attempt to adapt it to the different needs of modern planning is not only a violation of its logic but also an attenuation—a stretching out to thinness—of its expressiveness.

Adaptation Limited.—In fact, a Greek façade cannot be an integral part of a modern building. Instead of growing out of the interior conditions it is merely a screen, as arbitrary in its separation from what is behind it, as was the old painted act-drop of a theatre. The realisation of this has influenced architects to emulate or imitate, as the case may be, the Roman rather than the Greek style. And, so far as Roman architecture was an adaptation of Greek particulars to the new problems of the basilica, palace, public bath, triumphal arch, amphitheatre and so forth, the model may be judiciously followed. But, when the architect essays to adapt the colossal orders of a Roman temple to the front of a bank, library, museum, or railroad station he may display a feeling for impressiveness that gives little proof of intelligent comprehension of design. He commits the same error that he is fond of charging to the layman, who, he says, thinks of the design of a building only as an exterior effect and not also in relation to the plan and internal structure. For, to take but one point, that of

the lighting. Windows are an essential of a modern building, while in a Roman temple they played only a subordinate part; so that the pedimented, columned porch at the entrance and the colonnades at the sides were not employed at any sacrifice to the internal requirements.

Greek Model.—The window problem did not enter into the earliest example of the Classical Revival in England—the Greek design of the **Bank of England** (1788) by Sir John Soane. For, as the building was for the safe-keeping of gold and securities, the walls behind the colonnades and porch could appropriately be solid. Yet, even so, the character of the principal façade is not carried round to the side of the building and the design of the façade is merely a frontispiece. Still more so is the Greek façade of the **British Museum,** erected (1823–47) by Soane's pupil, Sir Robert Smirke (1780–1867), which not only has no co-ordination with the interior arrangement, but also obstructs the needed light.

George Basevi, another pupil of Soane's, contrived a more appropriate use of the Greek style in the **Fitzwilliam Museum, Cambridge,** because he was able to avoid the incongruity of windows. H. W. Inwood (1794–1843) applied the results of his study of the Erechtheion to the design of **S. Pancras Church;** while among the examples of William Wilkins (1778–1839) are the **University of London** and the **National Gallery.** The design of the latter, which is very inferior to that of the University, was unhappily fettered with conditions. Most fortunate of all the buildings of this Classical revival in England is **St. George's Hall, Liverpool,** by H. L. Elmes (1815–1847). It is lifted well above the level on a stylobate-terrace and the design presents a stately

treatment of Greek porticoes and colonnades; but the Greek is abandoned on the threshold, the interior being an adaptation of the Roman thermæ.

The incongruity of the Greek style with modern requirements led to a reaction in favour of astylar or columnless buildings; a return, in fact, to Renaissance design, which was started by Sir Charles Barry, whom we shall meet again in the Gothic Revival.

GERMAN CLASSICAL PERIOD

In Germany the classical revival in architecture was intimately related to the thought-movement of the time, especially as it expressed itself in literature. We have already noted the almost simultaneous publication of Stuart and Revett's "Antiquities of Athens" and Winckelmann's "History of Art," and the welcome which the former received in Germany. It was stimulated by the appearance in 1765 of Lessing's "Laokoon," a critical treatise on painting, sculpture, and poetry. He based it upon the Classic Canons; by which he meant not the canons of French pseudo-classicalism, which had hitherto stood for classic in Germany, but the Greek canons of art and literature as laid down by Aristotle. Indeed, he affirmed that Shakespeare, despite the irregularities of his style, was nearer to the spirit of Aristotle than Racine.

Goethe's Influence.—Goethe, at the court of Weimar, where French pseudo-classicalism was the vogue, espoused the new movement. He had visited Italy and confirmed for himself the studies of Winckelmann and Lessing's attitude. Being director of the Ducal Theatre, he was able in a large measure to control the dramatic taste of Germany, and encouraged Schiller

to write his classical dramas. The aim of both Goethe and Schiller was to reconcile the cultural ideals of the eighteenth century with the models of ancient Greece.

The zeal of this movement spread to architecture. The earliest example is the **Brandenburg Gate** in **Berlin** (1784); but the actual revival did not begin till some thirty years later, when its leaders were Friedrich Schinkel (1781–1841) and Leo von Klenze (1784–1864). The scene of Schinkel's achievements is mainly Berlin, where he is responsible for the fine design of the Old **Museum** and the **Royal Theatre.** The **New Museum** of Berlin was erected later (1843–55) by Stühler.

Klenze's opportunity came with the ambition of Louis I of Bavaria to increase the architectural magnificence of Munich and make it the rival of Berlin and Dresden as an artistic centre. Among the chief works of Klenze are the **Glyptothek** (Sculpture Gallery), the **Pinacothek** (Picture Gallery), and the **Propylæa.** Associated with him in the decoration of these and other buildings were the painters Peter von Cornelius and Wilhelm von Kaulbach and the sculptor, Ludwig Schwanthaler.

To this period belongs the **Parliament House** (Reichsrathgebande) at **Vienna** (1843) by Theophil Hansen.

FRENCH CLASSICAL PERIOD

Philosophic and Social Movement.—In France also the Classical revival was due to the momentum of writers and thinkers, impelled, however, in the first place, not so much by æsthetic considerations as by philosophic. It represented a revolution against the degradation of individual and national life, the corruption of the ruling forces of Church and State, the soulless frippery of courtiers and the abject destitution of the masses of the

proletariat. The last term was revived from the vocabulary of Imperial Rome and designated the peasantry and labourers of all kinds, whose duty was to labour for the benefit of the privileged classes and whose sole right was that of propagating their species.

The protest against this social rottenness was voiced by Jean Jacques Rousseau in treatises on "The Inequality of Conditions" and "The Social Contract" and by Diderot and the other Encyclopædists, who in the form of a dictionary, the first volume of which appeared in 1751, not only disseminated information but sought to guide thought, especially as to the rights and duties of government and the governed. Notwithstanding the effort of Church and State alike to strangle this intellectual and social movement, its influence spread not alone in France but throughout Europe and reached the American Colonies.

Example of Rome.—Gradually the traditions of Roman culture inherent in the French led them to reason that, since the evils of the State had grown out of the autocracy of Louis XIV, who emulated the authority and magnificence of a Cæsar, alleviation was to be sought in a return to the frugal living and high patriotic thinking of the Early Roman Republic. Suddenly, while all thoughts were being directed to this model, the young painter, Jacques Louis David, returned from Rome and exhibited at the Salon of 1785 his "Oath of the Horatii." The picture marked the beginning of a new epoch. It gave concrete expression to the fluid thought of the time. The austerity of the early Roman ideal became the watchword and the aim of the many as well as of the few intellectuals. Men began to address one another as *Citoyens*. When the Revolution burst, David was made

Minister of the Fine Arts and dictated the style of fashions and furniture, based on Roman models. From their places in the National Assembly the orators, clad in Roman togas, emulated the oratory of Cicero in his attack on the corrupt Catiline.

Then came the victories of Napoleon, and the ideal of a united and powerful France dictating policies to Europe took the place of the ideal of "Liberty, Fraternity, and Equality." David turning his coat and, vying with the rest in acclaiming Napoleon Emperor, painted pictures of Imperial magnificence and designed the so-called Empire furniture and costumes to suit the new ideas of splendour. Napoleon himself emulated the Roman Emperors by becoming a great constructor; on the one hand, prescribing a codified system of law, based on that of Justinian, and on the other patronising the construction of buildings of Imperial grandeur.

In later years, when after an interregnum of the Bourbon Kings Napoleon III snatched the crown, he too was ambitious to be the patron of great building achievements.

Such, in sketch, was the background of the Classical Revival in France.

Panthéon.—The first notable example is that of the **Panthéon,** originally dedicated to the patron saint of Paris, **S. Geneviève.** Erected (1755–81) during the reign of Louis XV, by J. J. Soufflot, its plan is a Greek cross, four halls surrounding a central one which is surmounted by a dome. The latter is composed of three shells, the exterior presenting a rare blend of grace and dignity, though the peristyle of Corinthian columns which forms the drum is somewhat lacking in force because of the absence of bases to attach the columns to

the stylobate. The façades are of monumental simplicity, consisting of solid masonry unbroken by windows and crowned with a chaste but emphatic cornice; the sole departure from the severity of design being a magnificent portico of Corinthian columns. The vaulted halls have been decorated in recent years by some of the foremost painters of France; but most of the work is pictorial rather than mural, and serves to accentuate the superior decorative quality of the panels by Puvis de Chavannes, which commemorate incidents in the life of Ste. Geneviève.

Imperial Period.—This example of correct classicalism, designed in protest against the rococo of its time, is also by its originality of treatment in marked contrast to the great production of the imperial period—the **Madeleine** (1804). Dedicated to Glory, it is a direct imitation of a Roman Corinthian temple of vast size; the only deviation from the antique model being the vaulting of the interior, which, inclining toward the Byzantine method, consists of three flattish pendentive domes, pierced with large eyes, the sole source of light to the interior.

Another imitation of the Roman model is the **Arc de Triomphe** in the Place du Carrousel, commemorating the victories of 1805 and intended as a principal entrance to the Tuileries Palace. On the other hand, the **Arc de l'Etoile,** largest of all triumphal arches, being 162 feet high by 147 feet wide, represents a free translation of the antique into an imposing design, sufficiently modern to form a fitting background to the passionate intensity of François Rude's sculptured group of the Volunteers of 1792, known as *La Marseillaise.* These, and other classical structures, which were planned by Napoleon,

were completed after the restoration of the Bourbons.

Between 1830 and 1850 an echo of the Neo-Greek movement was heard in France, but French logic repudiated the direct imitation of Greek forms and strove to reflect the Greek spirit only in a superior refinement of feeling. Its chief exponents were Duc, Duban, and Labrouste, who are represented, respectively, by the remodelling of the **Palais de Justice**, the **Library of the Ecole des Beaux Arts** and the **Library of Ste. Geneviève.**

Second Empire.—Chief among the architectural memorials of the Second Empire (1852–70) are the completion of the **Louvre** and the **Tuileries** by Louis Visconti and Hector Lefuel; and the **Paris Opera House** by Charles Garnier. The Tuileries was destroyed by the Commune in 1871, but the two wings of the New Louvre, which occupy the western corners of the Place du Carrousel, worthily continue in a modern spirit the character of Pierre Lescot's Renaissance façade. They represent, in fact, not Classicalism, but rather a reversion to Renaissance inspiration, as also does Garnier's masterpiece, which is a brilliant adaptation of the Italian style to the sumptuous requirements of a modern ceremonial theatre and to the extravagant ostentation and somewhat meretricious taste of a society of *nouveaux riches.*

Paris Re-planned.—A memorable feature of this period is the extensive replanning of Paris, projected under Baron Haussmann. It involved the widening of streets, creation of new boulevards, and general improvements of sanitation, as well as increased magnificence—a scheme of such magnitude that it has been but recently completed. Meanwhile, this gradual development of an organised plan, regulated in its progress so as to reconcile the rights of private ownership with the interests of the

community, has been an object lesson in the proper course of city reconstruction.

UNITED STATES CLASSICAL REVIVAL

The United States of America having won their independence as a nation, there was an immediate need for Government buildings. That they should be designed in the classical style naturally followed from the intimate relations which had grown up between the New Republic and France. When Washington had been selected as the seat of the National Government, it was a Frenchman, Major Pierre Charles l'Enfant, who laid out the city on a plan so convenient and ornamental, that it is strange no other city of America, with a similar chance of starting forth from the beginning, has emulated it. Instead, the general practice both with new cities and the extension of older ones, has been to adopt the gridiron plan of a repetition of parallel streets, cut at right angles by another repetition of parallels; a deadly monotonous system and far from convenient. For it makes no adequate provision for the gravitation of government, finance, and so forth to certain centres, which in consequence become inconveniently congested.

Plan of Washington.—The Washington plan, on the contrary, is logically designed about two foci: the Legislative centre, the **Capitol**, and the Executive centre, the Mansion of the President, **The White House.**

From these radiate broad avenues, called after the names of States, which in turn are cut by a repetition of streets, running east and west, and by another series, running north and south; the odd-shaped spaces, formed by the intersection of these streets with the avenues, being utilised as little public gardens. Thus Washing-

ton is a city of beautiful breathing spaces, its gardens, parks, and tree-bordered avenues comprising one-half of its total area.

The first official building was the **Treasury**, which was commenced in 1781 by Robert Mills, who held the position of United States Architect. The design, as completed, presents an imposing rectangular mass, the east side of which is masked with a colonnade of 38 Ionic columns, while Ionic porticoes decorate the other three façades. In 1792 work was started on the **White House** and a year later on the **Capitol.**

White House.—The Executive mansion, designed by James Hoban after the model, it is said, of a seat of the Duke of Leinster near Dublin, consisted of a two story house, surmounted by a balustrade and fronted by an Ionic portico. Even with the additions, made in recent years to serve as Executive offices, it is characterised by a dignified simplicity, befitting the residence of "the first gentleman of the land."

The Capitol.—The Capitol is finely placed on a hill some 100 feet above the level of the Potomac River. Its central portion was designed by William Thornton with some modifications suggested by his collaborators, B. H. Latrobe and Charles Bulfinch. The wings and dome were added 1851 to 1865. The main façade is on the east, where three imposing flights of steps lead up to three Corinthian porticoes which indicate the special functions of the building. That on the left, with allegorical sculpture in the pediment by Thomas Crawford, forms the main entrance to the wing occupied by the Senate Chamber, while that on the right, to which sculpture by Paul W. Bartlett has just been added, distinguishes the Hall of Representatives.

The curtain building that connects this south wing with the central block, was formerly occupied by the Hall of Representatives, but now contains the National Hall of Statuary, to which each State may contribute two statues of her "chosen sons." The corresponding building on the north, which until 1859 housed the Senate, is now devoted to the Supreme Court. The Central Portico is the ceremonial entrance to the whole and here the outgoing President hands over his functions to his successor. It leads into a rotunda which is decorated with the following historical paintings: "Landing of Columbus" by John Vanderlyn; "De Sota Discovering the Mississippi" by William Henry Powell; "Baptism of Pocahontas" by John Gadsby Chapman;; "Embarkation of the Pilgrims from Delft Haven" by Robert Walter Weir; "Signing of the Declaration of Independence" by John Trumbull, who also painted the remainder: "Surrender of Burgoyne at Saratoga," "Surrender of Cornwallis at Yorktown" and "Washington resigning his Commission at Annapolis."

The dome which forms a stately climax to the dignity of the whole design was erected in iron by Thomas Ustic Walter. It rises to a height of 268½ feet and is crowned by a statue of Liberty, nearly 20 feet high, the work of Thomas Crawford.

The organic fitness of the Capitol to the functions of Government has been supplemented in recent years by additional buildings, connected by subways: on the east, by the Congressional Library, primarily for the use of the Legislature, but virtually a national library; and on the northeast and southeast, by office-buildings, respectively, for the Senate and the House of Representatives.

Bulfinch.—Mention has been already made of Charles Bulfinch (1763–1844). The son of a wealthy physician in Boston, he graduated from Harvard and spent some five years travelling and studying in Europe, after which he settled in Boston and practised as an architect. He built the old **Federal Street Theatre** (1793), the first playhouse erected in New England, and in 1798 completed the work with which his name is most associated, the **State House** on Beacon Hill. It has been overgrown with additions but the original part, surmounted by a small, well-proportioned dome, still testifies to its designer's refinement of taste and constructive sincerity.

An exception to the use at this time of the Classical style is the **New York City Hall,** built 1803–12 by the Frenchman, Mangin. The design is Renaissance, influenced by the manner of the Louis XVI period, and is particularly choice in the refinement of its proportions and details.

Meanwhile, the **Sub-Treasury** and the **Old Custom House** in **New York** were built in the Classical style; as also were the **Custom House** in **Boston,** the **Mint** in **Philadelphia, Girard College** for Orphans in the same city; Thomas Jefferson's design for his new foundation, the **University of Virginia,** and most of the National and State Buildings that were erected before the Civil War.

GOTHIC REVIVAL

The Gothic Revival of the nineteenth century was chiefly confined to England where it grew out of a revival of spiritual energy in the Church itself. This spiritual Renaissance had begun in the last quarter of the eighteenth century, as a protest against the rationalistic temper of the age, its tendency to disregard the claims of

faith and dogmatic authority in favour of what appealed to reason.

Religious Revivals.—The Evangelical revival which ensued was an earnest attempt to awaken the Church from the supine indifference into which it had sunk, to kindle in the clergy a higher sense of their responsibilities and generally to promote a spiritual regeneration. The movement was reinforced both within the Church and on the part of the State by the excesses of the French Revolution, which seemed to menace all forms of authority. The revival grew apace during the early years of the nineteenth century and in time was supplemented by another which is known as the Oxford Movement.

For it originated in the University of Oxford with a group of men, including Keble, Newman, and Pusey, who felt that the Church was in danger of becoming merely a humanitarian institution. Accordingly they held that the Church of England was a branch of the Catholic Church and that its priesthood was in direct succession from Apostolic times; and in accordance with this urged a return to the ritual and the rubrical observances, enjoined in the First Prayer Book of Edward VI. This movement, known also as the Tractarian movement, from the tracts issued by its advocates, or Puseyite, from the name of its chief exponent, was assailed by the parties in the Church, distinguished as Broad and Low in opposition to the new party which came to be known as High.

The point of the controversy, as it concerns our study, is that the religious revival on the one hand led to a general restoration of the cathedrals and churches which had fallen into a condition of shameful neglect and, on the other, laid stress upon mediæval church architecture as the form which had been inspired by the fervour of

the Catholic faith and was alone suited to a Catholic ritual. Hence arose the study and the revived use of Gothic architecture.

Pugin.—Early in the century John Britton and Thomas Rickman had published an illustrated work on "Cathedral Antiquities and the Gothic Style," which went through many editions. They prepared the way for the influence of Augustus W. N. Pugin (1812–1852), who stood forth as a veritable apostle of the Gothic. For he supplied passion to the movement, so that it represented no shallow fad but, for the time being, a conviction that the characteristic tradition of the English must be the mediæval style. And to the realisation of it he brought a knowledge of detail and ornament, gained from many years spent in measurements and drawings of Gothic buildings; while for the purpose of reproducing the spirit of the originals he established and trained a school of craftsmen. He was, in fact, the pioneer of the later Arts and Crafts Movement. He became a convert to Roman Catholicism and his most important ecclesiastical work was expended on Roman Catholic churches and monasteries.

Houses of Parliament.—When the commission for the **New Houses of Parliament** was given to to Sir Charles Barry with the proviso that the style must be Gothic, Pugin was associated with him as chief designer of the exterior details and interior decorative work.

The style selected by the authorities, under the unfortunate impression that it should correspond with the adjacent Henry VII's Chapel, was the Tudor Gothic, or late Perpendicular Style, so that the façades in their lineal repetition present a certain stiffness and monotony. This effect, however, is offset by the grandiose

scale of the vast building and the picturesque sky-line of towers and spires and turrets. Of these the two dominating features are the lantern over the octagonal central hall, the richly decorated Victoria Tower marking the ceremonial entrance of the sovereign to the House of Lords, and the Clock Tower, which stands at the Commons' end, proclaiming its simple purpose as a clock tower and, when the summit-light is burning, the fact that the House is sitting.

But the grandest feature of Barry's conception is the plan, accommodated to the site of the still-existing Westminster Hall. Notwithstanding the cell-like complexity of its innumerable units, the whole presents an organic completeness of comparative simplicity, so adapted to the functions demanded, that it has served more or less closely as a model for many other buildings, notably for the **Parliament House** in **Budapest.**

The merit both of the plan and of the façades is emphasised by contrast with the **New Law Courts,** designed by G. E. Street (1824–1881). Here the zeal for archæological revival ran ahead of reasonable adaptation. So the exterior presents a congeries of mediæval details that have little or no relation to the internal necessities, with the admitted result that the interior is inconvenient, while its one fine feature, the great vaulted Hall, is rendered useless by not being on the same floor as the Courts.

Street was a pupil of Sir Gilbert Scott (1810–1877), under whose influence the Gothic revival reached its full flood. He, too was an archæological enthusiast, with a preference for the Early Decorated style, and his numerous churches are frankly reproductions, as near as possible, of Mediæval architecture.

On the other hand, a freer adaptation of the Gothic to modern needs and feeling appears in William Butterfield (1814–1900); for example, in the design of **Keble College, Oxford, All Saints, Margaret Street, London,** and his little church at Babbacombe in Devonshire. Other independent Gothicists were J. L. Pearson, architect of **Truro Cathedral** and eight London churches; James Brooks, who successfully employed brick in ecclesiastical design, and Alfred Waterhouse. The last has proved himself a master of plan in adapting the Gothic to secular buildings, two of his most important designs being the **Law Courts** and **Town Hall, Manchester.**

FRANCE

A characteristically French independence distinguishes the few churches in which the influence of the Gothic revival may be traced. The most essentially Gothic church of the period is **S. Clotilde, Paris,** designed by Theodore Ballin, who, however, in his later work, **La Trinité,** exhibits a remarkably interesting blend of Renaissance details with Gothic feeling. But the tendency in French ecclesiastical architecture was rather toward Byzantine, a movement which culminated in the great church of **Sacré Cœur** on **Montmartre,** erected by Paul Abadia (1774–1812).

UNITED STATES

In the United States the Gothic Revival made its appearance as early as 1839–40, in the work of two English architects, Richard M. Upjohn and James Renwick. The former was entrusted with the rebuilding of **Trinity Church, New York** and later erected the **State Capi-**

tol of **Connecticut**, while Renwick is responsible for **Grace Church** and **S. Patrick's Cathedral**, New York.

With the advent, to be noted later, of architects trained in the Ecole des Beaux Arts, the Gothic vogue declined. But in the past ten years it has taken on a new life of remarkable achievement, under the leadership of the New York and Boston firm of Cram, Goodhue and Ferguson, which recently has been dissolved, the late partners now working independently. The vitality which they have succeeded in giving to their work in the number of examples distributed over the country may be traced to two causes.

The first is revealed in a little book, "The Gothic Quest," written by Ralph Adams Cram. It breathes the passion of a Pugin; it is inspired with such religious faith and devotion as the builders of the old cathedrals and churches must have possessed. Hence its author's conviction that the architectural forms, evolved as an expression of that faith and in accordance with the needs of the worship it inspired, are the only fit embodiments for the continuance of that faith and worship. To Mr. Cram, in fact, the Gothic does not represent merely a style to be professionally employed; but a living concrete expression of the soul. Furthermore, the thorough mastery of Gothic forms has been directed, not as in the beginning of the Gothic Revival, to a reproduction of old models, but to an application of the old principles of Gothic design to the changed conditions of modern times. There is, accordingly, in the designs of these architects no evidence of the "dead hand." They belong to and serve the present, while preserving a link of tradition with the past. By few, indeed, if any, has the Gothic been revived with so much material and spiritual vitality.

CHAPTER II

THE MODERN SITUATION

Following the trend of modern civilisation, architecture to-day, in so far as it is not continuing to imitate the past, is becoming, on the one hand, more cosmopolitan and, on the other, more individualistic. The free-trade in ideas, encouraged by travel and through the interchange of architectural magazines, is obliterating the distinctions of nationality. Moreover, the immense variety and the newness of problems that now confront the architect are tending toward a personal solution of them. They demand invention on his part and stimulate him to individual expression.

The Student's Attitude.—Hitherto in this book we have studied the historic styles of architecture, in their origins and revivals; but, if it has served its purpose of awakening interest in the art, we shall for the future think less of styles and acquire the habit of studying a building very much as we study an individual. We do not estimate an individual, in the first analysis, at any rate, by comparing him with some worthy of history, but by his fitness to the present—the front he presents to society at large and his value in the specific part that he plays in the common life. Has he, for example, dignity and some other charm of character? Are his motives sincere? Does he possess the qualities that make his work not only well-intentioned but practically efficient, and so forth?

Similarly, we shall estimate a building not as a thing

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SCOTLAND YARD, BY RICHARD NORMAN SHAW

Courtesy of Architect, Wm Harmon Beers

WOODBURN HALL

RESIDENCE OF MRS. COOPER HEWITT, NEW WINDSOR, N. Y. P. 468

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TRINITY CHURCH, BOSTON

By Henry H. Richardson. P. 462

© J. G. Bragdon, Pittsburgh, Pa.

COUNTY BUILDINGS, PITTSBURGH

By Henry H. Richardson. P. 462

© Frank H Child Courtesy of Architect

THE BREAKERS, NEWPORT, R. I.

RESIDENCE OF CORNELIUS VANDERBILT, BY RICHARD MORRIS HUNT. P. 462

© The American Architect. Courtesy Architects, Carrere & Hastings

DETAIL OF RESIDENCE OF MR. THOMAS HASTINGS

WESTBURY, LONG ISLAND. P. 468

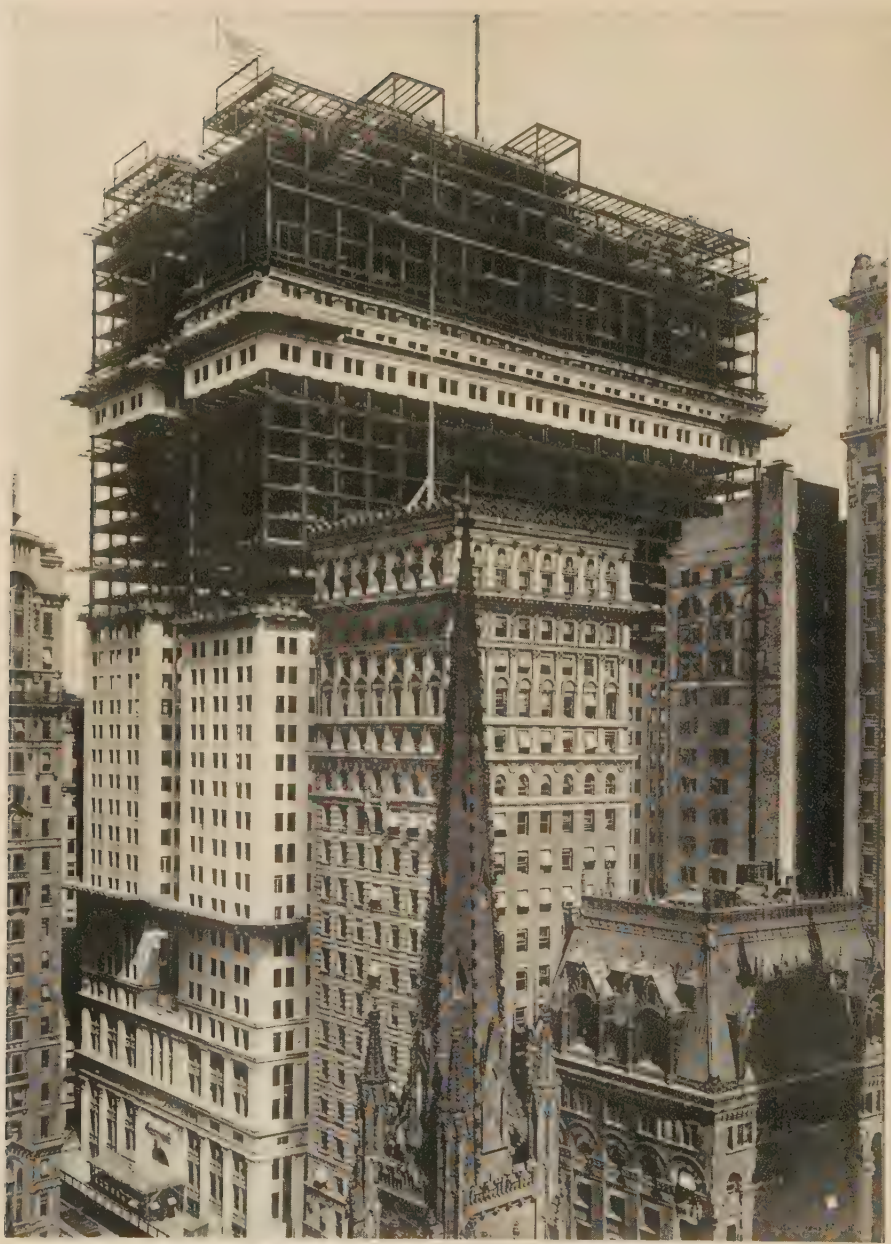
SCHILLER THEATRE BUILDING, CHICAGO

By Louis H. Sullivan. A Design That Asserts the Height and Upward Growth of the Structure. Only Central Part Carried to Full Height, so an All-Around Cornice Was Possible. P. 474

Courtesy of Thompson-Starrett Co

WOOLWORTH BUILDING

By Cass Gilbert. Fifty-one Stories. Pp. 471, 476



Courtesy of Thompson-Starrett Co

STEEL CAGE CONSTRUCTION

Scene in Lower New York; Spire of Trinity Church in the Foreground. P. 470

apart from our lives, but as a product and expression of and a contribution to, the living present. We shall think of it in terms of life, as simulating the organic and functional qualities of a living thing. It will be all but a living thing, both as it takes its place amid the life of its surroundings and also as it serves the needs of life in its specific capacity.

Already we have thought of buildings as organic, as structures that have been built upon a well-considered plan, with parts that perform their individual functions in the common purpose. We have also noted that the character of the structure was affected by the actual methods of building and the material employed. We have learned to be critical on certain points. Was the plan a fit one for its purpose? Did the façades conform to or confuse or contradict the character of the plan? Did the design conform to the purpose of the building and the methods of construction, or was it, however handsome, in effect a sham? Was it overladen with arbitrary enrichments that had little or no relation to structure and were mainly or only designed for display? Did it sacrifice the necessities of the interior to merely æsthetic considerations?

And these processes of appreciation which we have acquired the habit of applying to buildings of the past, we have but to bring to bear upon the buildings of the present. For the architecture of to-day is true or false, good or bad, reasonable and admirable, not because it does or does not conform to such and such types, but because it succeeds or fails in meeting the practical and æsthetic requirements of to-day.

Need of Public Appreciation of the Art.—Hence the need of an intelligent appreciation of architecture on the

part of the public. It is requisite for their own sake as well as for that of the architect. One of the great difficulties with which the latter has to contend is the ignorance and indifference not only of the public but also of official authorities. They do not give the sincere architect the encouragement of intelligent praise; they exercise no restraint upon the insincere and inefficient. They dismiss all responsibility for the result by "putting it up" to the "expert." Architecture, in consequence, is liable to be regarded not as an art but merely as a profession. Thus aid and encouragement are given to those architects who practise it mainly or solely as a "business proposition."

And in these days the responsibility of the public is more necessary than it ever was. For the problems of architecture are so infinitely more various and exacting, that they demand for their successful solution the co-operation of the layman. But, although people profess democratic ideas, they act in the matter of architecture as though they were living in aristocratic times, when respect was paid to birth, and not in times when we are trying to cultivate respect for common humanity. Today, if we are true to our professed ideals, the tenement house of the worker is as important in the social scheme as the palace of the rich or the country house of the well-to-do. And it should be a subject of public concern.

Or, to consider another of the many new types demanded by modern conditions—the factory. It must meet the need of the specific industry. That is its utilitarian necessity. But there is also the humanitarian necessity that it shall be a fit place for the men and women who spend in it one-half of their waking lives. And, again, there is what we may call the communal ne-

cessity, as it affects the outside lives of the community, that the factory shall not be a thing of ugliness or drear monotony, sordidly devastating the possible beauty of the locality. For we have advanced little in civilisation if we are content to substitute for the grim castle of the Middle Ages, surrounded by its huddle of retainers' huts, a grim fortress of industry, entrenched amid the mean homes of men and women, not considered in their individual and collective capacity as human beings, but massed under the mechanical term—"operatives."

And what is true of the factory is true of the retail shops and department stores, city markets, warehouses, docks, and watersides, and of the hundred and one varieties of need created by modern industry and commerce. It is also as true of the provision for the cultural needs of the community in churches, schools, colleges, libraries, and museums, as well as for needs of recreation and health—theatres, concert halls, moving picture houses, dance-halls, baths, hospitals and parks. But why attempt to enumerate the innumerable problems that modern life presents to the architect? The point is that all involve sociological considerations, affecting intimately the lives of common humanity. Architecture, in fact, when properly considered and practised, is the great democratic art, which through co-operation of artist and layman, may become one of the greatest means of human betterment. How essential, therefore, that the understanding and appreciation of it should be fostered by public education!

Since this is the purpose of the present book, which only incidentally has suggested the history of the art, it is not possible or necessary to attempt to cover the modern manifestation of it in all the countries. It must suf-

fice to allude briefly to those of Great Britain and the United States, in which architectural activity has been conspicuous, though the results are widely different.

MODERN MOVEMENT IN GREAT BRITAIN

In Great Britain the modern tendency has been especially marked in the direction of independence and individuality. It began with certain movements, which perhaps might be more correctly styled fashions. There was the **Queen Anne** revival, which, although it involved much that was tricky and much gerrymandering in construction, drew renewed attention to the capabilities of brick and its suitability to the climate. Further, from the fact that it gained the popularity of a fashion, it encouraged the public to take some sort of interest in architecture. And this interest was further stimulated by the "Morris Movement."

William Morris's Movement.—It was the limitation of William Morris, that in his zeal for things Mediæval he had no toleration for any other forms of decoration. Moreover, he assumed that the art of the Middle Ages was created solely by craftsmen working in harmonious co-operation. He refused to believe that their work was controlled by a master designer and inveighed in general against architects as the cause of everything that is objectionable in subsequent architecture. In both respects, therefore, his influence was reactionary rather than helping forward. But, on the other hand, it has lasted and borne valuable fruit in promoting a regard for honest craftsmanship, on which he laid essential stress, and in reviving a recognition of the parts played by painting and sculpture and the decorative arts generally in alliance with architecture. Accordingly, one indi-

rect result of Morris's influence has been the increased attention given to the character and quality of simple masonry, a refreshing and salutary reaction from the notion that the interest of architecture depends on picturesque variety of detail and ornament. There was even a group of young architects who, inspired by Morris's idea of craftsmanwork, sought to confine their designs to the simplest elements of building. They would be first, last, and all the time, builders; all precedents of architectural detail should be disregarded; they would confine themselves to the simplest abstractions of structural elements and out of these in time a new decorative vernacular might be evolved.

It is interesting to note the analogy between this aim and that of Matisse and others in painting. In both arts it represents a revolt against the sophistication and mechanicalism that are apt to result from the repetition of school-learned styles. It would dig away the surface and get down to the sub-soil, in which elemental principles are rooted, in order to encourage a growth that more nearly may conform to modern needs and ideals.

On the other hand, there is the obvious objection, too obvious by the way to be accepted as conclusive, that the past has so grown into the present, the inheritance has become so integral a part of present understanding and feeling, that one cannot eliminate it from one's consciousness by taking thought, as one can strip one's body of clothes. Meanwhile, although this argument seems plausible the fact remains that in painting, at any rate, many artists, ignoring argument in favour of actual doing, are clothing their ideas in new forms that are coming to seem reasonable to an increasing number of people.

"Free Classic" Movement.—However, many architects, accepting the inheritance of the past and yet themselves in revolt against the scholastic reproduction of the styles, initiated a movement in favour of what they called "Free Classic." Their endeavour was to discover the elementals in a given style and to use them with flexible understanding and feeling and with free play, especially of decorative accessories. The first to give practical evidence of this idea was R. Norman Shaw, R. A., in the **New Zealand Chambers**, in Leadenhall Street, **London**, which were erected as far back as 1873.

It was an artist's essay in personal liberation; the work of a man who, while he did not love the Classics less, loved life and his own participation in it more, who claimed for himself the artist's birthright of personal expression and creativeness. Fortunately his adventure aroused considerable interest in the intelligent public, while other architects saw in it a promise of their own artistic deliverance. The result has been for Great Britain a genuine rebirth of architecture as a living and personal art. In no other country have the variety and versatility of our modern life been more freely expressed in its buildings. Not always happily, no doubt. The purist may point to some as "awful examples," and thus seek to justify his belief in safe mediocrity rather than what he considers dangerous latitude. But the purist is not an individualist and Great Britain is individualistic, even to a fault. Therefore, what her architects are doing is racy of the country's temperament—a thing commendable in itself. Meanwhile, there is an abundance of recent buildings in which reasonableness and adventure are happily united and a sound regard for the

utilities and for structural logic are wedded to originality and taste.

In the past twenty-five years London, for example, has been transformed into one of the most architecturally impressive cities of Europe. And not in the way of aping in more or less perfunctory fashion the splendours of imperial Rome; but in a spirit of artistic individual enterprise, and with that courage even to make mistakes, provided the end be liberty, that befits the Metropolis of self-governing Dominions.

MODERN MOVEMENT IN THE UNITED STATES

Since the middle of the nineteenth century the United States has experienced an extraordinary activity in building. An unprecedented demand was created by the opening up of the West and the rapid increase of population and wealth, as well as by the destruction wrought by the great fires in Chicago and Boston. On the other hand, circumstances led to the development of a new method of construction—that of the "steel cage." Meanwhile the new period discovered two architects—Richard Morris Hunt (1828–1895) and Henry Hobson Richardson (1838–1886)—whose influence had a marked effect upon the architectural development.

Hunt and Richardson.—The former, younger brother of W. M. Hunt, the painter, was born at Brattleboro, Vermont, in 1828; while Richardson, ten years his junior, was a native of Louisiana. Both received their training in the Ecole des Beaux Arts in Paris, and by their influence established the vogue for that celebrated school which has so strongly affected architectural progress in America. When they returned home—Hunt in 1855 and Rich-

ardson in 1865—they brought back a thoroughly scientific training, already reinforced by practical experience in Paris. And the genius of the one complemented that of the other; for while both had a personal force that commanded attention and compelled respect, Hunt's special faculty was executive and organising, while Richardson's was more specifically that of the artist. Thus between them they established in the public mind the understanding of architecture as, not merely a process of building, but one of the Fine Arts, and also set the profession of architecture on a sound basis. For in 1885 Hunt took a prominent part in founding the American Institute of Architects, of which he was the first president.

Among his most important works are the **Theological Library** and **Marquand Chapel** at **Princeton University**; the **Divinity College** and **Scroll and Key House** at **Yale**; the **Lenox Library, New York**, since removed; the **New York residences** of **W. K. Vanderbilt** and **Henry G. Marquand**; George W. Vanderbilt's country house at **Biltmore** and some of the palatial "cottages" at **Newport**, including "**Marble House**" and "**The Breakers.**" He also exhibited his genius for planning in the laying out of the **Metropolitan Museum of Arts** in **New York.**

Richardson took as his model the Romanesque of Southern France, but used it with so much freedom and adaptability that, it has been said, he came very near creating a style of his own. It is seen to best advantage in those examples in which he was unhindered by outside interference, especially in the **County Buildings** in **Pittsburgh** and **Trinity Church, Boston.** Both of these are distinguished by structural significance; dignity of mass, fine correlation of parts to the whole and by a decorative

distinction that avoided alike the flamboyance of some of his earlier embellishment and the baldness of simplicity that characterised the work of some of his imitators. Other notable instances of his art are: **Sever Hall** and **Austin Hall, Harvard;** the **City Halls** of **Albany** and **Springfield;** the **Public Libraries** of **Woburn, North Easton, Quincy, Malden** and **Burlington** and the **Chamber of Commerce, Cincinnati.**

While Richardson's artistic seriousness and refined taste left a lasting impression, his selection of the Romanesque style, although it obtained some following, was abandoned in favour of the Roman and the Renaissance; the change being due to the way in which the subsequent American students of the Ecole des Beaux Arts reacted to its teaching.

Beaux Arts Training.—The "Beaux Arts" training is based upon the study of Greek, Roman, and Renaissance Styles. The Greek, within a limited range of building types, exhibits the most perfected relation of plan to elevation, of form to function; the most harmonious combination of mind and feeling. The Roman represents a genius of constructive logic and practical inventiveness in applying principles to a wide variety of problems. The Renaissance replaced constructive logic by a logic of taste and rehandled Roman details with a finesse of skill that was as subtle as the Greek. Moreover, the Greek, Roman, and Renaissance are (to use a modern word) *standardised* styles; in which proportions have been calculated and the principles reduced to certain recognised relations of harmonious agreement. Thus they lend themselves to a more exactly determined kind of study than is possible with the Gothic, which more nearly corresponds to the free growths of nature, involving all

the principles of structure and the elements of beauty, but with a freedom of application that makes formulation difficult.

Now the effects of this Beaux Arts training by no means always corresponds with its aim. The aim of the School, responding to the French aptitude for logical processes, is to teach the student to reason, to cultivate the habit of applying to every problem an independent and individual process of logic. He is taught to get down to the bone of any problem and discover its cleanest and simplest solution. The historic styles are treated not as models for imitation but rather as a grammar of principles and applications, by means of which the student may fit himself for original composition. The system, in a word, encourages originality and not imitation.

Effect of Beaux Arts Training.—Meanwhile, among the many architects in America whose names are associated with the "Beaux Arts," only a minority is composed of actual graduates of the school. The remainder have availed themselves more or less of the courtesies that the school extends to foreign students; but have not enjoyed the exhaustive training in the direction of independent reasoning that it is the school's purpose to impart. The result is that many of them acquired the habit, not of approaching the solution of each problem independently, but of becoming more or less intelligent and tactful adapters of Roman and Renaissance characteristics. In consequence of thus misrepresenting the aim of the Beaux Arts, the latter has incurred in this country the unjust charge of promoting imitation—the precise antithesis of what the school actually stands for. Accordingly, there has arisen a reaction against what is supposed to be the "Beaux Arts" influence.

In this reaction there is a possibility of less than justice being done to some of these quasi-Beaux-Arts architects. Many of them have been men of exceptionally fine taste. They raised the standard of taste in the community, accustomed the public to consider beauty as well as utility, and added greatly to the dignity and beauty of the externals of life. They played not only an excellent part but a necessary one in the evolution of architecture in America. They will be looked back to as the men of the transition, who established the recognition of architecture as an art, fostered higher standards of taste and compelled a public that was chiefly interested in commercial expansion to begin to regard art as an indispensable element in progress.

Influence of Chicago Exposition.—The opportunity of propagating these ideas on a large scale was furnished by the International Exposition at Chicago in 1892–93. Already the Centennial Exhibition at Philadelphia in 1876 had awakened manufacturers to a need of artistic design, if their products were to compete successfully with those of the older countries. Moreover, innumerable persons had found their imaginations stimulated by the varied display of the Department of Fine Arts. The ground was thus prepared for the organised effort in the direction of an object lesson in beauty, such as that of "The White City" at Chicago.

Here the Directors virtually gave free hand to the Committee of Architects, in the lay-out of the grounds and the disposition of all the buildings. The result was an ensemble on a scale, not only more magnificent than ever had been attempted before for such a purpose, but complete in its union of variety and harmony. It represented, on the one hand, what could be accomplished by

the co-operation of the allied arts of landscape and garden design, architecture, sculpture, and painting, and, on the other, an extraordinary lesson in the desirability of beauty as a practical asset. The impression that it made was nation-wide. Everywhere the dry bones of indifference to beauty began to quicken into a living interest in beauty as the fit and natural expression of the nation's progress in civilisation. It has found abundant activity during the past twenty-five years in Federal, State, Municipal, and commercial buildings, in the development of parks and boulevards and, more recently, in the increased attention given to the scientific and artistic planning of cities.

And this movement, which has transformed the character of public buildings, has worked as freely in the case of domestic buildings, and, on the whole, with more originality. For the principle of the movement has been *eclecticism;* the more or less intelligent adaptation of old styles to new needs; the styles especially followed being the Roman and the Italian Renaissance. The axiom of the body of men which had controlled the movement has been that it is safer and better to follow good models than to try to be original. And for the time being very possibly they were right. But this has always been the plea of eclectics, whenever and wherever they have occurred in the history of all the arts; and such eclecticism has always marked a transition period, leading up to a fresh outburst of original creativeness.

Weakness of Imitation-Tendency.—The immediate and great advantage to the architects of thus following old models has been, to establish, through the Roman, a familiarity with large problems of construction and, through the Italian Renaissance, a refinement of taste in

the handling of details. Meanwhile, the disadvantage has been a tendency to take an excess of interest in merely stylistic considerations. The architect has often seemed more intent upon reproducing with taste an old style than upon adapting it to the practical needs of the living present.

It would be possible to point to libraries, for example, that have been designed with a view to beautiful exteriors rather than to that of storing and distributing books. The design has not grown out of the practical needs but has been more or less arbitrarily adopted for its own sake. The architectural principle of fitness has been violated. Furthermore, this preoccupation with the faithful reproduction of an old style has made a fetish of consistency. Everything in and out of the building must be "in the style." The architect, being an imitator, compels all his co-operating artists to imitation. The painter must imitate such and such a style of mural decoration; the sculptor, such and such a style of sculptural embellishment. Sculptors and painters alike have been trained to forget that they might be interpreters of the life of the present and to work and feel in the manner of the past. The manner—not the spirit—for the spirit of the old decorators was keenly alive to the life of their own times. Hence these architects of the transition have done much to find employment for painters and sculptors, but practically nothing to promote the development of creative artists. Indeed, their influence in this respect has been quite the other way—retrogressive rather than progressive.

Possibly an even more flagrant illustration of this tendency is to be found in the palatial residences, erected during this period in town and country. So slavish was

the insistence upon conformity, that the furniture and fittings had to be either antiques or imitations of antiques. The occupants of such houses were trained to be blind to the beauty of anything that was not in the style of their surroundings; and were forced to try to feel at home in surroundings of the past. Typical, possibly, is the story of the millionaire, who fled from his stylistic apartments to one of the attic bedrooms, provided for the servants, and fitted it up to suit his own ideas of comfort.

The result of all this has been that the majority of the rich, who might have been leaders of taste and played the part of Mycænas or Medici to the artists of to-day, have been the victims of an obsession, imposed upon them by architects, that has made them neglect and even discourage the art of the present. They have put a premium on antiques and a devastating discount on contemporary art. While bled by the speculators in antiques and near-antiques, they have doled out patronage, for the most part, only to those workers in metal, wood, and other fabrics who were willing or compelled by necessity to imitate. The idea of encouraging native art or of fostering the genius of some individual creator has been all but entirely overlooked. Creative genius has been stifled.

Freer Tendency in Domestic Architecture.—On the other hand, in the case of domestic buildings, erected during say, the past ten years, especially country houses, there are the evidences of a veritable renaissance of architectural art. It is due in a great measure to the improved taste of the community. A new generation has grown up which by travel and study has familiarised itself to a more or less extent with art and has come to think of art as an expression of life and, therefore, has

desired to embody its sense of beauty in the home. Such people have co-operated with the architects who are no longer designing merely for them but also with them. The result has been an increased attention to the question of fitness; fitness of design to the character of the locality; to the conditions of climate and to the various needs and necessities arising out of the modern circumstances of living. To cite but one example: the problem of domestic help in America is so urgent that labour-saving considerations have affected the planning of the homes, tending to concentration rather than diffusion in the arrangement of rooms, service offices, staircases, and so-forth; and out of this organic lay-out of the interior a suitable exterior treatment has developed.

Thus, while the architect may still be adapting motives derived from old styles, he is no longer doing so for the main purpose of reproducing a given style; he has ceased to be a stylistic pedant. He adapts with flexibility and freedom; using a style in so far as it conforms to the character of his plan. The plan is his own creation and, if in the development of his design he feels the fitness of adapting, he adapts creatively. The result is that, since the domestic architecture of the past has been made to contribute to the needs of the present, a new kind of domestic architecture has been evolved in America, characterised by variety of design, originality of treatment, and, more and more, by a regard for that fitness to the special requirements of each problem, which is the foundation of every true advance in architectural design.

Office Buildings.—Side by side with this progress toward originality in domestic architecture has been a similar tendency in that of public buildings, especially the

office building. The office building is distinctively a feature of American cities, because it grew out of conditions in certain cities which imperatively demanded some such expedient; and, having in these cases proved its fitness to business situations, has been adopted elsewhere. Though the earliest of these tall buildings, characteristically known as "sky-scrapers," were erected in Chicago, the spot which now contains the greatest aggregation of them is Manhattan Island, the section of New York City bounded by the North, East, and Harlem Rivers, in which the business of the city is concentrated.

In the situation thus existing was an area, limited in size and incapable of being enlarged, while the business demands upon it were continually expanding, in the way both of increased accommodation and adequate financial return upon the value and cost of the land. It was impossible to meet these conditions by spreading out laterally; the only alternative was to build skyward. By the time the necessity of this was realised, two inventions made it practicable—an improved method of rolling steel and the development of elevator connection. The problem of accessibility was solved by the latter; that of economical and efficient construction by the former. Accordingly, once again, as so often in the history of architecture, practical expediency, methods of building, and the material employed were operative in evolving a new kind of form.

"Steel-Cage" Construction.—The method of building is that of the so-called "steel-cage" construction: a new application of the principle of "post and beam" construction, in which the vertical and horizontal members are composed of steel and riveted together. The foundation posts are anchored to the ground, which in the case of

Manhattan Island mostly consists of a very hard species of rock. The posts are connected at the top by cross beams, thus forming the skeleton frame of a complete story, upon which other similar skeleton stories are erected, their number varying up to the present extreme in the **Woolworth Building**, of fifty-one stories. This mode of construction does away with the necessity of external buttressing; the strain is one of tension on the ground, the problem of wind pressure being met by the introduction of interior cross-braces. By this system also the downward pressure is distributed throughout the several stories, each carrying its own weight of exterior and interior walls; so that, in the process of construction it is not unusual to see some of the upper stories apparently completed, while lower ones are still in a skeleton state, awaiting the arrival of the material that is to sheathe them.

The character of the sheathing, representing the design of the building from the outside, will be considered presently, for of primary and essential importance is the character of the interior. Here is manifested at its highest the creative originality of the American architect in constructive adaptability to the needs and necessities of the problem. These office buildings and their counterparts in domestic life—the tall apartment-houses—represent the economic tendency of this age in its progress through combination to possible co-operation. They also embody the latest achievements of science and invention, applicable to the requirements of convenience and health. They are thus in a distinctively modern way, as well as with remarkable completeness, organic architectural structures. In a singular degree, they are self-efficient. Their cellular arrangement comprises an elaborate ag-

gregation of members, each having its special function; while the whole is provided with its own system of power plants for the supply of heat, air, light, and locomotion. They are in a way the equivalent of the Roman basilica and insula, developed to that higher degree of complexity that the modern age demands and modern progress in science and invention has made possible. In their organic completeness one discovers conspicuous evidence that architecture, after a long period of revivals, has recovered its creativeness.

Exterior Design of Office Buildings.—It is in studying the exterior design of these sky-scrapers that one finds the progress toward originality has been more halting and uncertain. The explanation of this cuts deep down to the fundamentals of all progress in art and life. It is out of man's needs and necessities, physical, intellectual, emotional, and spiritual, that he is impelled to advance, and the advance is most sure according as it most closely fits the circumstances. In so far as the architects were dealing with the practical problems of the interior of these buildings they conformed consistently to the demands of fitness, and their advance was sure. But when they approached the problem of the exterior, the necessities of which are few and comparatively unexacting, the logic of fitness was apt to be superseded by mere caprice of choice. They experimented, for the most part rather aimlessly, with various historic styles of treatment; clapping on to the façade embellishments derived from Roman, Italian, Renaissance, Venetian Gothic, and so forth; treating the design mainly as a matter of added ornamentation instead of something to be evolved out of the special character of the structure.

We must remind ourselves that the façades of these

buildings, whether the material be stone or marble, brick, terra-cotta, or reinforced concrete, are virtually only a sheathing to the actual organic structure inside of them. They correspond to the clothes on a human body. There are certain necessities to be served in the case of the building: on the one hand, financial; on the other constructive. The investors demand a certain return on the cost or value of the site, which determines the aggregate of rentable floor space, and hence the height of the building and the amount to be expended on the façades. Again, the lay-out of the floors calls for a certain quantity of window-spaces and there is the further constructive necessity that, while parts of the building may under certain restrictions overhang the sidewalks, nothing may project over adjoining property. Within these limitations the architect is usually free to adopt such design for the exterior as he chooses.

In the early days of the sky-scraper, which coincided with the period of more or less imitative reproduction of old models, the architect found himself confronted with an entirely new problem in design. His classical studies had familiarised him with buildings comparatively low and characteristically horizontal in design. His experience of Italian Renaissance had involved buildings, still inconsiderable in height though they included several stories, and had led him to be pre-occupied with details of design, especially with the effectiveness of a cornice. On the other hand, the characteristic of the new problem was vertical instead of horizontal, and on a scale that gave predominance to mass over detail; while the specific detail of the crowning cornice could only be fully adopted in the case of structures that did not abut on adjoining property.

Height—the Principle of the Design.—But, for a time, the architect failed to grasp the newness of his problem. He was confronted with height, but did not start with it as a principle of design. Instead, he tried to accommodate the old principles to the new conditions; experimenting with various methods of embellishment near the ground and at the top, and treating the main, intermediate part as merely a repetition of floors.

Gradually, however, he realised the fact that the new buildings actually presented a new problem which could only be solved by taking the vertical principle as the basis of the design. So he bethought himself of a precedent in the column. It is the vertical member in the Classic design, and comprises three subdivisions: base, shaft and capital. The base might be emulated in the treatment of the lower part of the façade, which generally encloses a bank or some feature of special importance, surmounted by a mezzanine floor. The counterpart of the column's shaft was the repetition of stories, while the effect of the capital could be reproduced in some emphatic crowning treatment. And those architects who most logically adopted the precedent of the column, recognising that the beauty of a tall building must be evolved from its special characteristic of height and that the beauty would be enhanced by a suggestion of height growing up in its own strength, abandoned the mere repetition of stories for a vertical treatment that would emphasise the suggestion of upward growth.

In some cases they applied to the masonry between the windows continuous bands of vertical ornament, projecting in the nature of shafting or piers, which by their effect of light and shade carry the eye upward, giving to the whole structure a suggestion of soaring. Or, in other

cases, they so proportioned the width of the windows to the width of the masonry that the latter, especially at the angles of the building, gave the suggestion of soaring piers. Meanwhile there still continued to be architects who ignored these devices, treating the windows and masonry solely as recurring horizontal features, with the result that their repetition contradicts both the vertical feeling and that of upward growth.

By degrees, however, as the principles of verticality and growth came to be generally accepted, it was recognised that the analogy of a tall building to a Classic column was fallacious, since the building should involve a complete design, while the column is only a constituent member of a structure and one, too, that is designed to support a horizontal member. Possibly the realisation of this was assisted by the difficulty of treating the top of the building. For the most frequent conditions permitted the projection of a cornice only on one side, that of the front side of the building, where it sticks out like a prodigious mantelshelf. That architects should have persisted so long in reproducing this futile expedient seems only to be explained by a habit of seeing a design on the drawing board as an elevation to be viewed from one fixed point, instead of as a structural composition, occupying space and to be seen from a variety of directions. Moreover, it is a fact that, as one walks along a street, it is the side of a building that is chiefly and longest visible, while, by the time one is opposite the front, the narrowness of the street and the height of the building make it difficult to view the façade as a whole.

Gothic Influence.—Accordingly, in time, as the logic of the problem of the tall building came to be more resolutely grasped, it was realised that, if a precedent was to

be adopted, it might be found in the Gothic style. This is essentially the style of vertical design and upward growth, and its characteristic profile has a tendency to set back from the ground line instead of projecting over it. Furthermore, if you choose to consider it, it was the style of the Northern nations as contrasted with the horizontal styles of the Mediterranean nations; the style of the races most represented in our population, evolved by them as an expression of their adventurous and daring spirit. Even in relation to inherited racial genius, as well as to fitness of design and practicability of conditions of site, the Gothic is full of suggestion.

Its influence at first appeared in the character of detail of some of the later sky-scrapers; but gradually more fundamentally, as the architect began to give fuller attention to the masses of his composition. Up to the present, the noblest example of this new movement is the **Woolworth Building,** which is not only the tallest of the tall buildings but a monument of arresting and persuasive dignity. The repetition of ornamental detail may be somewhat dry and mechanical; but from a short distance off this melts into the mass, which vies with mediæval towers and spires in its splendid assertion of organic upward growth.

Such a building supplies an uplift to the spirit, whereas the exteriors of many sky-scrapers, conveying no suggestion of organic growth, being only monstrous piles of masonry, produce instead an oppression of the spirit. Nor is such an impression imaginary; it is a physical result of the sunless, airless canyons into which these cliff-like walls have transformed the narrow streets. Architects, in fact, realise that the problem they present is one not only of construction and design but also of re-

lation to the general city plan. Various proposals have been made to confine them to certain areas; to restrict their height on the street line, while setting back the higher portions, which would rise like towers above the rest of the building; to limit the number of such towers in a given space, and so forth. Some such restrictions are enforced in certain cities; but in New York, where the problem is greatest and most urgent, the consideration of the question has not made much headway against the general indifference to matters of large public concern. Here, as in so many other instances, the welfare of the community, as a collective whole, is not properly adjusted to individualistic interests.

Architect and Engineer.—This and other matters of "city planning"—a subject that is more and more engaging the attention of progressive communities—demands the co-operation of the architect and engineer. Indeed, the co-operation of their functions in all important works, especially those of a public character, is one of the urgent needs of the age. There is scarcely an architectural scheme that does not involve problems of engineering; and many an engineering achievement would have been of greater public utility if beauty of design had been considered. For it is only a narrow view of utility that overlooks the utility of beauty. It is in the power of an engineer to improve or mar the appearance of a locality, and hence to add to or detract from the happiness of the human lives which inhabit it.

Nor is the union of the functions of engineer and architect a new thing. The only difference between the past and the present is, that in Classic, Gothic, and Renaissance periods the functions were united in one person, whereas with the advent of the age of iron, followed by

that of steel, they have been specialised in separate individuals. Accordingly, to-day there is one school of Architecture, and another school of Engineering; and the separation has caused each to disregard the points at which their respective arts can and should unite. The desirability, however, of some affiliation is being recognised and certain schools of engineering now include a course in the principles of architectonic design.

Any termination of a book on Architecture is but an abrupt stop in the telling of a story that is perpetually continuous. It will go on as long as man applies his creative ability to the solution of new problems of construction as they arise, and persists in stamping the work of his hands with the evidence of his desire of beauty. This little book, however imperfect, will add its mite to human progress if it has awakened or stimulated in the reader a realisation of the rich and varied humanness of the art of Architecture in its intimate relation to the lives of individuals and the progress and welfare of the community.

GLOSSARY

Abacus: the block that forms the uppermost member of the capital of a column. Usually a square block; but in Roman Ionic and Corinthian, the sides are concave, while in Gothic the block may also be circular, octagonal or clustered.

Abutment: a member of solid masonry to sustain a lateral strain or thrust; e.g., that of an arch.

Acanthus: a plant of the warmer regions of Europe, distinguished by large, handsome leaves, with indented and sharply pointed edges. Conventionalised as a decorative motive in Classic architecture: specially in the Corinthian capital.

Acropolis: a hill within a city, converted into a citadel; often containing, as at Athens, the temples of the tutelary or guardian divinities.

Acroteria: plinths or blocks, placed on the apex and ends of a **Pediment** (which see), for the support of a carved ornament.

Æsthetic: of or pertaining to beauty. That quality in anything, especially a work of art, that stimulates the senses, emotions or imagination to an appreciation and love of the beautiful.

Aisles (lit. "wings"): the lateral divisions of a church or cathedral, parallel to the nave and separated from it by columns.

Alcove: a covered recess, opening from a room or corridor.

Ambo: plural Ambones: raised pulpits from which the Epistles and Gospels, respectively, were read.

Ambulatory: a space, usually covered, for walking in.

Amphi-prostyle: used to designate a temple-plan that has a rear as well as a front portico. Compare **Prostyle.**

Anta: plural Antæ (lit. opposite): specially in Classic architecture, the pilaster attached to the side of a temple, opposite a column. Generally, any pilaster opposite a column. For **In Antis** see **Portico.**

Antefixæ: ornamental blocks placed along the lower edge of the roof of a temple, to cover the joints of the tiles.

Anthemion: a decorative device, also called **Honeysuckle** or **Palmette** ornament, composed of flower forms or fronds, radiating from a single point. Used especially on the cyma recta moulding, round the necks of columns and on stele-heads and antefixæ.

Annula or **Annulet:** a small fillet or flat band, encircling a Doric column below the **Echinus** (which see).

Apse: originally, the semi-circular projection at one end of a basilica hall; later, the semi-circular or polygonal termination of a choir in a Continental Gothic cathedral, as contrasted with the square-ended choir of English Gothic.

Apsidal: having the form of an Apse.

Apteral (Gk. "without wings"): applied to a temple that has no colonnade on the sides.

Arabesque: a fanciful, painted, modelled, or carved ornamentation, composed of plant forms, often combined with human, animal, and grotesque forms. Used by the Romans and revived by the Renaissance decorators. Also

used by the Arabs—hence the name—for a flatly modelled and coloured ornament of intricate design, without human or, generally, animal forms.

Arcade: a system or range of arches, supported on columns. e.g., the range of arches and columns on each side of the nave of a cathedral or church. When used as an embellishment of exterior or interior walls, it is distinguished as Open or Blind Arcade, according as it is detached from or attached to the plane of the wall.

Arch: generally, a structure supported at the sides or ends and composed of pieces, no one of which spans the whole interval. Specifically, a structure, involving one or more curves, supported at the sides, spanning an opening and capable of supporting weight. Distinguished according to the nature of the curve as, segmental, semi-circular, ogee, pointed, horseshoe, four-centred, trefoil, cinquefoil, and multifoil. Arches, involving straight lines as well as curved, are known as "shouldered."

Architect (pr. ar-ki-tect): lit. the master-builder.

Architectonic: possessing an architectural, or organically constructive, character. See **Organic.**

Architecture: the science and art of designing and constructing buildings, with a view to Utility and Beauty. See **Beauty.**

Architrave (lit. "principal beam"): the lowest member of an **Entablature** (which see); hence applied to any beam that rests on columns and carries a superstructure; also to the moulded frame which bounds the sides as well as the head of a door or window opening.

Archivolt: the mouldings around the face of an arch.

Arris: the sharp edge at which meet two flutings of a Doric Column.

Ashlar: applied to masonry of which the stones are squared and dressed with hammer or chisel.

Astragal: a convex moulding with a profile semi-circular, like that of the Torus, only smaller in width. Often decorated with Bead and Spool ornament.

Astylar: used of a façade, not treated with columns.

Asymmetries: deviations from geometrical symmetry and precision; such as substituting a slight curve for horizontal and vertical straight lines; varying slightly the spaces between columns, setting columns on a curving instead of a straight line, and so forth. Refinements which Hellenic, Byzantine, and Gothic architects introduced to give flexibility and rhythm to their structures. See **Refinements.**

Atlantes: See **Caryatid.**

Atrium: in Roman houses an entrance court open to the sky, but surrounded by a covered ambulatory. In Early Christian architecture, a similar entrance court in front of churches.

Attic: the upper story of a building, above the cornice.

Axis: an imaginary line, about which an architect arranges the symmetry of his design. The main axis usually runs through the longest direction of the building and may be intersected at right angles by a second axis. See **Crossing.**

Baldachino: or Baldachin: a canopy supported on uprights; used especially to surmount an altar.

Baluster: a small ornamental pillar supporting a rail or coping; the whole structure being called a **Balustrade.**

Balustrade: See **Baluster.**

Baroque: fantastic, grotesque, applied to some of the heavily dec-

orated architecture of the eighteenth century.

Barrel-vault: also called Semi-circular or Wagon-headed vault: a continuous arched roof over an oblong space, resting on the side walls.

Barrow: an artificial mound of earth, forming a prehistoric sepulchral monument.

Bar Tracery: See **Tracery.**

Base: the lower member of any structure; compare **Plinth.**

Basilica: originally a building erected for business or legal procedure; specifically the large hall of such a building; later, in Christian times, a church that more or less retains the plan of such a hall.

Batter: the upward, inward slope of a wall, affording greater resistance to **Thrust** (which see).

Battlement: the termination of a **Parapet** (which see) in a series of indentations, called embrasures, while the intervening solid parts are called merlons.

Bay: each of the principal compartments into which the vaulting of a roof is divided; also used of the space between any two columns of an **Arcade** (which see) of a Gothic church.

Bay-window: a window of angular plan, that projects from the wall and reaches to the ground. Distinguished from an Oriel window that is supported on a bracket or **Corbel** (which see) and from a Bow-window which is curved in plan.

Bead: a small convex moulding; often decorated with **Bead and Spool** ornament.

Bead and Spool: an ornamental device of small halved spheres, alternating with halved spools; used on small convex mouldings.

Beauty: as applied to Architecture, those qualities in a building that stimulate and gratify the æsthetic sense. They result from the architect having created an Organic structure according to the principles of **Fitness, Unity, Proportion, Harmony,** and **Rhythm** (see these terms).

Bel Étage: French term for the principal story of a building. Compare Italian, **Piano Nobile.**

Belfry: specifically, the part of a tower in which the bells are hung; hence, sometimes, the whole tower.

Bema: a raised platform, reserved for the clergy in Early Christian churches.

Blind Arcades: See **Arcade.**

Bond: the method of laying bricks or stones to bind the masonry. In **English Bond,** the courses are composed alternately of **Headers** and **Stretchers** (which see); in **Flemish Bond** the Headers and Stretchers are laid alternately in each **Course** (which see).

Boss: ornamental projection at the intersection of the ribs of vaults and ceilings.

Bow-window: See **Bay-window.**

Branch Tracery: See **Tracery.**

Broken Entablature: one that projects over each column or pilaster instead of maintaining a single straight plane.

Broken Pediment: where the triangular or curved form is broken into in the centre; an ornamental device adopted in the Renaissance.

Buttress: a mass of masonry, projecting from the face of the wall to resist the thrust of an arch or vault. When the mass is separated from the wall and connected with it by an arch, the arch and mass form a **Flying Buttress.**

Byzantine: the style evolved in Byzantium (Constantinople) in the fifth century, A. D.

Cairn: an artificial heap of stones, sometimes piled abount a corpse-chamber, which served as a prehistoric sepulchre and monument.

Campanile (cam-pah-neé-la): Italian term for bell-tower.

Canopy: specifically, the carved ornamentation that surmounts a niche, altar or tomb.

Capella Major: the space in a Spanish cathedral, enclosed with screens or **Rejas** (which see) and containing the High Altar.

Capital: the upper member of a column, pier, pillar or pilaster.

Carillon: a set of stationary bells, played upon by a mechanical contrivance, regulated from a keyboard.

Caryatid: plural Caryatides: sculptured female figures, used instead of columns or pilasters to support an entablature or cornice. Said to be so called after the women of Caria, who aided the Persians and were made slaves. Male figures, so used, are called **Atlantes.**

Caulicoli: the eight stalks of the acanthus ornament, supporting the volutes of a Corinthian capital.

Cavetto: a simple concave moulding.

Cavetto Cornice: the hollow member that crowns a wall or door in Egyptian architecture.

Cella: the portion of a temple enclosed by walls.

Cerce: a mechanical supporting device used in the construction of vault ribs and light arches. Shaped like a bow, in sections that work telescopically, so that it can be adjusted to the width of the span.

Chamfer: the edge produced by chamfering; that is to say cutting a square edge or corner to a flattened or grooved surface.

Chancel (Lat. cancellus, a screen): See **Choir.**

Chapter-house: originally the assembly place of the Chapter or fraternity of abbot and monks of a monastery, for the transaction of business. Now attached to English cathedrals for the transactions of the Chapter of bishop and canons.

Chevêt (pr. shev-ay): term applied to the east end of a Romanesque or Gothic church, when it takes the form of a circular or polygonal apse, surrounded by an aisle which opens into chapels.

Chevron: a decorative device, like a V, repeated either vertically or horizontally; forming in the latter case a zig-zag.

Chryselephantine (Gk. "gold-ivory"): applied to a sculptured figure of wood, when the nude parts are covered with gold and the draperies with ivory.

Choir or **Chancel:** the portion of the church or cathedral east of the nave, screened off for the use of the choir. See **Coro.**

Cimborio: See **Lantern.**

Cinquecento: Italian term for the period called in English the sixteenth century.

Cinque-foil: See **Foil.**

Clerestory or **Clearstory** (Fr. clair = light): the highest story of a nave immediately above the **Triforium** (which see), containing windows overlooking the roof of the aisles.

Cloison: a partition; specifically, the metal bands dividing the pattern in *cloisonné* enamel.

Cloisters (lit. enclosed space): the covered ambulatory around the open court of a monastery; still retained as an adjunct of many English and Spanish cathedrals.

Close: the precinct of an English cathedral; survival of the "Garth" or grassy enclosure of a monastery.

Coffer: one of the sunken panels of geometrical design, used in the ornamentation of a ceiling, vault or dome.

Colonnade: a system or range of columns, surmounted by an entablature. When it entirely surrounds a temple or court it is called a Peristyle. When it is attached to the front of a building it is known as a **Portico** (which see).

Column: a vertical member, consisting of a **Shaft**, surmounted by a **Capital** and resting, usually, on a **Base**. Its function is to support, in Classic architecture, an entablature, and in Gothic, an arch.

Composite: a Roman Order in which the capital is composed of the upper part of an Ionian Capital and the lower part of a Corinthian.

Concave: curving, like the segment of a circle, inward, forming a hollow to the eye of the spectator.

Concentric: having a common centre.

Console: a supporting block, projecting from a wall, generally decorated; specifically the supports of the cornice over a door or window. See **Modillion.**

Conventionalisation: the representing of something in a formal way, generally prescribed by custom. For example, it was neither ignorance nor lack of skill, but a custom, prescribed by the priesthood, that caused Egyptian artists to represent the human figure with head and legs in profile and trunk full front. In decorative design, based on natural objects, the best usage avoids naturalistic representation, and translates the form into a convention, which, however, reproduces and even emphasises the salient features of structure and of growth or movement. Thus, the Greek acanthus ornament actually suggests more energy of growth and more expressiveness of form than the natural plant.

Convex: curving, like a segment of a circle, outward or toward the spectator.

Corbel: a block of stone, often elaborately carved, which projects from a wall to sustain a weight, especially that of roof-beams, or vaulting shafts. See **Console.**

Corinthian: latest order of Hellenic architecture, commenced by the Hellenic architects and fully developed by the Romans.

Cornice: specifically, in Classic architecture, the crowning or uppermost member of an entablature; generally, the crowning feature of any wall construction, or doors and windows.

Coro: the space screened off for the use of the choir in a Spanish cathedral, situated in the nave, west of the Crossing.

Corridor: a wide gallery or passage within a building, usually with rooms opening into it.

Cortile: Italian term for interior court, open to the sky and surrounded by arcades.

Course: a continuous horizontal layer of stones or bricks. See **Bond.**

Cove: specifically, the concave surface that may occur between the top of an interior wall and the flat of the ceiling.

Crenellated: fortified with battlements.

Cromlech: a prehistoric memorial, composed of stones of huge size, disposed in one or more circles; e.g., Stonehenge.

Cross: adopted by the Church in the fourth century as the symbol of Christianity. The separation of the Eastern or Greek Church from the Western or Latin Church, was reflected in the shape of the Cross; the Greek having all its four members equal, while the lower member of the Latin is lengthened.

Crossing: the space about the intersection of the two **Axes** (which see) of a church or cathedral, on which the nave, transepts, and chancel abut. Often surmounted by a dome or tower.

Cruciform: used of the plan of a church that is based on the form of a cross. Where a Greek cross is followed the nave, choir, and transepts are of about equal

length; while if the Roman is the model, the nave is lengthened. See **Cross.**

Crypt: vaulted chambers beneath a building, especially beneath the chancel of a church, in which case often used for burial.

Cupola: See **Dome.**

Cusps (lit. points): one of the points forming the feathering or foliation of Gothic **Tracery.** Frequently ornamented with a carved termination.

Custodia: See **Tabernacle.**

Cyclopean: of colossal size; derived from Cyclops, a giant of Greek myth.

Cyma (pr. Si-mah) (lit. "wave"): the rising and falling curve; a moulding, perfected by the Hellenic sculptors, whose profile combines a convex and a concave curve. When the curve begins in convex and flows into concave, it is known as **Cyma Recta** (Hogarth's "Line of Beauty"). When the concave precedes the convex, the profile is called **Cyma Reversa.** The latter is also called **Ogee.**

Cymatium: the crowning member of a Classic cornice, so called because its profile is a **Cyma Recta** (which see).

Dado: the surface of an interior wall, between the base moulding and an upper moulding, placed some distance from the ceiling.

Decastyle: See **Portico.**

Decorated: used to distinguish the second period of English Gothic (fourteenth century), owing to increased richness of window traceries and other ornamentation. Compare **Rayonnant.**

Dentil: one of a series of square, so-called tooth-like, blocks that ornament the cornice in the Ionic and Corinthian Orders.

Diagonal: specifically applied to the arches or ribs of a vaulting that are diagonal to the main axis. Compare **Longitudinal, Transverse.**

Dipteral (lit. "double-winged"): designating a temple that has a double range of columns on each side of the cella. Compare **Pseudo-dipteral.**

Dolmen: a prehistoric megalithic monument, composed of single stones set on end or on edge and crowned with a single slab; forming a sepulchral chamber, often embedded in a mound. See **Mastaba.**

Dome: a spherical roof, over a circular, square or polygonal space rising like an inverted cup. Hence, when the structure is small, called a **Cupola.**

Doric: the earliest and simplest **Order** (which see) of architecture developed on the mainland of Hellas.

Dormer (lit. "sleeping"): a window in a roof, usually of a bedroom, often projecting with a gable end.

Drum: specifically a cylindrical wall, supporting a dome; used also of a section of the shaft of a column.

Early English: first period of English Gothic, evolved during the thirteenth century.

Eaves: the edge of a roof projecting beyond the wall.

Eclecticism: the practice of combining various elements of style, derived from various sources.

Echinus: the cushion-shaped member of the Doric capital, just beneath the **Abacus** (which see). It has an ovolo or egg-shaped profile. Also used of the **Egg and Dart** moulding (which see).

Egg and Dart: an ornamental device, composed of an alternate repetition of an egg-shaped form, halved vertically, and a spear head. Used especially on mouldings that have an ovolo or egg-shaped profile.

Embrasure: the sloping or bevelling of an opening in a wall, so as to enlarge its interior profile. See also **Battlements**.

Enamel: a material composed of pigment and glass, fused and applied in melted state to surfaces of metal, porcelain or pottery, for decorative purposes. See **Mosaics**.

Encaustic: a process of painting in which the pigments are dissolved in melted bees-wax and applied hot.

Engaged Column: a column that does not stand clear of the wall at the back of it.

Entablature: the horizontal member of a classic or columnar order. It rests upon the **Abacus** of the column and consists of a lower, middle, and upper member—the **Architrave, Frieze, and Cornice**.

Entasis (Gk. "Stretching"): a curved deviation from the straight line; specifically, the swell in the profile of the shaft of a Classic column.

Epinaos: See **Naos**.

Exhedra: a curved recess, usually containing a seat; hence a curved seat of marble or stone.

Façade: the outside view or elevation of a building that faces the spectator.

Fan Vaulting: See **Rib**.

Fascia: one of the flat, vertical faces into which the Architrave of an Ionic or Corinthian Entablature is divided.

Fenestration (lat. *fenestra*, window): the distribution of windows and openings in an architectural composition.

Fillet: a small flat band, used especially to separate one moulding from another.

Finial: the finishing part or top, frequently decorated, of a spire, pinnacle or bench-end. See **Pinnacle**.

Fitness: a principle of beauty; that the design of a work of art shall conform to the necessary requirements of its purpose, material and method of making.

Flamboyant ("flaming"): used to distinguish the third period of French Gothic (fifteenth century), from the encreased elaboration of the window traceries.

Fleche: specifically, a wooden spire surmounting a roof.

Fluting: the vertical grooving, used to enrich the shaft of a column or pilaster.

Flying Buttress: See **Buttress**.

Foil: a leaf-like division in carved ornamentation; especially in the tracery of a Gothic window or the panelling of walls and bench-ends. According to the number of foils included, the design is distinguished as trefoil, quatrefoil, cinquefoil, etc.

Formeret: See **Rib**.

Fresco (lit. fresh or damp): see **Secco** and **Tempera**; terms used in **Mural Painting** (which see). After the wall had thoroughly dried out, a portion, such as the artist could cover in one day was spread with a thin layer of fine, quick-drying plaster. While the latter was still fresh or damp, the artist, having prepared his drawing or "cartoon," laid it in place and went over the lines with a blunt instrument, which left the design grooved in the plaster. Then he applied the tempera colours, finishing as he proceeded, for the colour sank into the plaster and rapidly dried with it, so that subsequent touchings up or alterations could only be applied by painting in Secco. As long as the surface of the wall remains intact, the colours are imperishable and retain their vivacity and transparence. They have, too, the appearance of being part of the actual fabric of the wall, as the bloom of colour upon fruit. Thus **Fresco** is the fittest and most beautiful

process of mural painted decoration.

Frieze: specifically, the middle division of an Entablature, between the Architrave and the Cornice (which see). Also the continuous band of painted or sculptured decoration that crowns an exterior or interior wall.

Gable: the upper part of the wall of a building, above the eaves; triangular in shape, conforming to the slope of the roof. Compare the Classic **Pediment.** If the edge of the gable rises in tiers it is distinguished as **Stepped.**

Gaine (lit. **a sheath**): a sculptured decoration of a half-figure, terminating below in a sheath-like pedestal.

Galilee: a porch or chapel, sometimes attached to an English Gothic cathedral, usually at the west end. For the use perhaps of penitents. Compare **Narthex.**

Gambrel: applied to a roof, the slope of which is bent into an obtuse angle.

Gesso-work: a decorative design in **Relief** (which see) executed in fine, hard plaster.

Gothic (lit. **of, or pertaining to the Goths**): a term applied to Mediæval architecture by the Italians of the Renaissance to mark their contempt for what was non-Classic. The term without reproach has been continued to designate the architectural style between the Romanesque and Renaissance, during the thirteenth, fourteenth and fifteenth centuries. The French have tried to substitute the term, **Ogival.** See **Ogee.**

Grille: a wrought metal screen of openwork design.

Grisaille: a style of painting in greyish tones, in imitation of bas-relief.

Groin: the angle or edge at which the surfaces of a cross or groined vault meet. See **Vault.**

Groined Vault: See **Vault.**

Guilloche (pr. Gil-losh): an ornament composed of the repeated intertwining of two or more bands; frequently used to decorate a **Torus** (which see).

Gutta (lit. "drop"): one of the small truncated cones, attached to the underside of a **Regula** (which see) and the **Mutules** (which see) of a Doric **Entablature.**

Half-Timbered: when the construction has a timbered frame, the interstices of which are filled in with masonry or concrete.

Hammer-beam roof: late form of timber roof construction, without continuous **Tie Beams** (which see).

Harmony: a principle of Beauty, that governs the variety in unity of a work of art, relating all the parts in an accord of feeling.

Header: in masonry, a brick or stone, laid across the thickness of the wall. See **Bond, Stretcher.**

Heart-leaf and Dart: an ornament composed of a heart- or leaf-shaped form and a dart or tongue. Used specifically on Cyma Reversa mouldings.

Hexastyle: See **Portico.**

Hip-roof: a roof that rises from all the wall-plates and, accordingly, has no gable.

Honeysuckle: ornament. See **Anthemion.**

Hypæthral: completely or partially open to the sky.

Hypostyle: having the roof beams supported on columns.

Impluvium: the cistern sunk in the **Atrium** (which see) of a Roman house to receive the rain water.

Impost: the member above the capital of a column, on which the arch rests, usually composed of mouldings.

In Antis: See **Portico.**

Ionic: the order of architecture, developed by the Hellenes of Asia Minor and adjoining islands, and

borrowed and modified by the mainland Hellenes.

Insula: Roman term for a residential building, housing many families.

Intercolumniation: specifically in Classic architecture, the space between any two columns, or between a column and the wall of the **Cella**.

Interlace: in decoration, an ornament composed of interwoven bands or lines.

Jambs: the side members of the openings of doors and windows.

Kaaba: the cube-like shrine in the Mosque of Mecca.

Keystone: the central stone of an arch.

King-Post: in timber roof-construction; a central post, resting on one of the **Tie-beams** (which see) to support the ridge. See **Queen-Post**.

Lady-Chapel: a chapel in an English cathedral, dedicated to the Virgin Mary, usually situated at the back of the altar.

Lancet: applied to an arch or window that has a sharply pointed, lance-shaped opening.

Lantern: a superstructure that rises above the roof level, open below and admitting light through its sides. Called in Spanish a **Cimborio**.

Lierne-rib: See **Rib**.

Lintel: the horizontal beam, supported on two uprights or posts, covering an opening and supporting weight, e.g., the top member of the frame of a doorway or window.

Loggia: a covered gallery, open to the air on one or more sides.

Longitudinal: parallel to the direction of the main axis. Specifically applied to the arches and ribs of the vaulting of a nave or aisle in the direction East or West. Compare **Diagonal** and **Transverse**.

Louver: a lantern-like cupola on the roof of a mediæval building, originally the flue for smoke from the fire in the centre of the hall.

Lunette: a space somewhat resembling a half-moon, with the curve uppermost. Especially the wall-space, enclosed by the ends of a barrel-vault; or by the wall-arch of a groined or rib vault.

Lych-Gate (lit. "corpse-gate"): covered gateway at entrance to a churchyard, where the coffin rests during the first portion of the burial service.

Machicolation: the opening between a wall and a parapet, when the latter is built out on **Corbels** (which see). Through it missiles or burning liquids could be showered upon assailants.

Mansard or **Mansart**: applied to roofs which have a hip or angle—instead of a continuous slope—on all four sides. Named after the French architect who popularised, though he did not invent, it.

Mastaba: an Egyptian tomb, so-called from its construction resembling the ordinary Egyptian bench, which is composed of a horizontal board, supported upon boards that slope inward toward the seat.

Mausoleum (mō-so-lée-um): tomb of more than ordinary size and architectural pretensions. So called from the tomb erected at Halicarnassus in 325 B.C., in memory of Mausolus, King of Caria, by his widow, Artemisia.

Megalith (lit. huge stone): **Megalithic**, composed of such. See **Cyclopean**.

Megaron: Homeric word for palace or large hall.

Member (lit. limb): any component part of a structural design that has a specific function to perform.

Menhir: a prehistoric monument, consisting of a single rough or rudely shaped stone, usually of large size (megalithic); perhaps originally connected with fetish worship, to ward off evil spirits; then as a memorial of a dead chieftain or a victory. The prototype of the **Obelisk**.

Merlons: See **Battlements**.

Metope: the space between any two of the **Triglyphs** (which see) of a Doric **Frieze**. Originally left open, later filled and often with sculptured relief.

Mezzanine: a low story situated between two higher ones.

Mihrab: a niche in the wall of a mosque that marks the "Kibleh," or direction toward the **Kaaba** (which see) at Mecca.

Minaret: the tall slender tower, attached to a Mosque, from a balcony of which the muezzin summons the people to prayer.

Modillions: the decorated blocks ranged under the **Cornice** of a Corinthian or Composite **Entablature**.

Monolith (lit. single stone): usually of large size. **Monolithic**, composed of such.

Mosaic (lit. belonging to the muses, the goddesses of the arts): decorative designs composed of particles, usually cube-shaped, of marble, stone, glass or enamel, used to enrich the surfaces of vaults, walls and floors. See **Opus**.

Motive: in decoration, the form on which the ornament is based; e.g., the acanthus motive.

Mullion: one of the vertical stone bars dividing a Gothic window into two or more "lights." Also one of the bars of a **Rose-Window** (which see). The horizontal bars are called **Transoms**.

Mural: of or pertaining to a wall; e.g., a mural decoration. See **Secco, Fresco**.

Mutule: one of a series of rectangular blocks under the **Cornice** of a Doric **Entablature**, studded on the underside with **Guttæ** (which see).

Naos: the principal chamber of an Hellenic temple, containing the statue of the deity. Entered from the front through an unwalled vestibule, called the Pronaos and from the rear by a corresponding vestibule, called Epinaos or Opisthodomos.

Narthex: the arcaded porch of a Christian basilica, where penitents, barred from full communion, worshipped. See **Galilee**.

Nave (from **Naos**, which see): central division of a church or cathedral; usually west of the choir.

Necking: the hollowed surface between the **Astragal** (which see) of the shaft and the commencement of the capital; specifically of a Roman Doric column.

Necropolis: city of the dead: an assemblage of graves or tombs.

Newel Post: the shaft around which a spiral staircase is constructed; also the principal post supporting the handrail of a staircase.

Norman: the style in England, preceding Early English: corresponding to Romanesque on the Continent.

Nymphæum (consecrated to the nymphs): a building containing ornamental water, plants and statuary.

Octastyle: See **Portico**.

Ogee (pr. O-jée): another term for the **Cyma Reversa**. See **Cyma**.

Ogival: term applied to the Pointed Arch, because it is composed of two contrasted curves. Owing to this arch being characteristic of the Gothic style, the French have proposed to call the latter **Ogival**.

Open Arcades: See **Arcades**.

Opisthodomos (Gk. "room be-

hind"): same as **Epinaos.** See **Naos.**

Opus reticulatum (lit. "net work"): a veneering composed of equal square slabs, arranged so that their joints are diagonal and form a net-like mesh.

Opus Sectile (lit. "Cut-work"): a mosaic ornament, composed of glass or marble, cut into various shapes to form a pattern. The richest variety of it is known as **Opus Alexandrinum.**

Opus Spicatum: pavement composed of bricks laid in "herring-bone" fashion.

Opus tesselatum: a mosaic ornament composed of tesseræ or square blocks of glass or marble.

Order: specifically, in Classic architecture, the combination of **Column** and **Entablature.**

Organic: primarily used of the structures of animals and plants; secondarily, of any organised, whole, composed of parts that perform definite functions; always in this book with an implication that the relation between the whole and its parts partakes of the nature of a living, as opposed to a mechanical, structure.

Oriel-window: See **Bay-window.**

Orientation: the construction of a temple or church on a main axis, regulated to the position of the sun or a star on some particular day or night; or to the points of the compass, usually an east and west axis.

Ovolo (lit. "egg-like"): a Classic convex moulding—a quarter-round in Roman architecture; in Hellenic, the curve of conic section known as hyperbolic.

Palmette: See **Anthemion.**

Papier-maché: a tough plastic substance, formed of paper-pulp, mixed with glue, or of layers of paper, glued together; and modelled into ornamental forms.

Parapet: specifically, the portion of the wall of a building above the eaves of the roof. Generally, a retaining wall, or enclosing wall, e.g., the walls of a bridge, above the roadway.

Patio: the open, inner court of a Spanish or Spanish-American house.

Pavilion: specifically, a section of a building that projects from the plane of the main façade and has a distinct roof treatment.

Pediment: specifically, the triangular member surmounting the **Portico** of a Classic temple. It rests on the Entablature and terminates on each side in a raking Cornice, paralleling the slope of the roof. In Renaissance and later times, a triangular surface, framed by a horizontal and two sloping cornices, e.g., the embellishment surmounting windows and doors. The triangular space within the horizontal and raking cornices is called a **Tympanum** and is frequently decorated with sculptured figures or ornament. Tynpanum is also used for the surface between a lintel and the *curved* cornice over it.

Pendentive: one of the four triangular, concave members that convert a square space into a circle for the support of a dome. Their apexes rest on the four piers at the angles of the square, and, as the triangles arch inward, their bases unite in a circle.

Peripteral (lit. "winged-around"): designating a temple, when the cella is surrounded by a single range of columns. Compare **Pseudo-peripteral.**

Peristyle: a system or range of Columns, specifically surrounding a temple or court. See **Colonnade.**

Piano nobile: Italian term for the principal story of a building. Compare French **Bel Étage.**

Pier: a vertical supporting member, other than a column or pillar.

Pilaster: a square column, project-

ing about one-sixth of its width from the wall, and of the same proportions as the Order with which it is used.

Pinnacle: a small turret-like termination; especially at the top of buttresses to increase their weight and capacity of lateral resistance.

Plate Tracery: See **Tracery**.

Plinth: specifically, a block, usually square, which forms the lowest member of the base of a column. Generally, the block on which a column, pedestal or statue rests.

Podium: a wall supporting a row of columns; specifically, in Roman architecture, the temple platform that does not project beyond the line of the columns as does a **Stylobate** (which see).

Polygonal: a figure composed of more than four angles, of equal size.

Porte-cochère (pr. port'-co-share'): a covered entrance, under which a carriage can be driven.

Portico: an open space or ambulatory covered by a roof, supported on columns, forming a porch. In Classic temples the front of the portico consists of **Columns, Entablature,** and **Pediment,** covered by the extension of the roof of the **Cella.** According as the **Portico** has four, six, eight or ten columns in front the temple is distinguished as Tetrastyle, Hexastyle, Octostyle or Decastyle. When the Portico is enclosed on the left and right by an extension of the sides of the Cella it is distinguished as "**In Antis.**"

Post: an upright supporting member, as of a door. An element in the principle of construction known as Post and Beam.

Post and Beam: generic term for the constructive principle of a horizontal member, supported upon vertical ones.

Posticum (Latin for **Epinaos**): See **Naos.**

Pot Metal: glass fused in a crucible.

Pozzolana: a clean, sandy earth, of volcanic origin, used by the Romans in combination with lime to form concrete.

Profile: specifically, the outer edge of the section of a moulding.

Projection: a general term for any member that extends beyond the main planes of a structure, especially used of mouldings.

Pronaos: See **Naos.**

Proportion: a principle of Beauty, that regulates the quantity and quality of the parts of a work of art according to their functional importance in the organic unity of the whole.

Propylæa: the entrance gate or vestibule to a group of buildings.

Proscenium (lit. "before the scene [skene]: in the Classic theatre a structure, occupying the open end of the horse-shoe plan, to screen from view the "skene" or actor's dressing-place. It formed the background to the Drama.

Prostyle (lit. "having columns in front"): used to describe a temple plan that has a **Portico** at only one of its ends. Compare **Amphi-prostyle.**

Prototype: the primitive, rude, original form, out of which finer and more efficient types have been developed.

Pseudo-dipteral (lit. "false-double-winged"): when the temple appears to have a double row of columns on the sides, but the inner range is omitted and the space between the columns and wall of the **Cella** is thereby double the usual **Intercolumniation** (which see).

Pseudo-peripteral (lit. "false-winged-around"); when the columns on the sides of a temple, instead of standing free, are **Engaged** (which see) in the wall of the **Cella.**

Pteroma (pr. ter-ō'-ma): pl. ptero-

mata: term applied to the side walls of a Cella; hence, sometimes to the space between the latter and the columns of the Peristyle.

Pylon: a doorway, flanked by two Truncated Pyramids with oblong bases. See **Pyramid.**

Pyramid: a structure of masonry, generally with a square base, with triangular sides meeting at an apex. When the sides mount in steps it is distinguished as a **Stepped Pyramid.** When the sides end abruptly, before reaching the apex, it is called a **Truncated Pyramid.**

Quadriga: a four horse chariot.

Quatrefoil: See **Foil.**

Quatrocento: Italian term for the period called in English the fifteenth century.

Queen-Post: in timbered roof construction, one of the two posts resting on one of the **Tie-beams,** at equal distance from the centre, to reinforce the rafters. See **King-Post.**

Quoin: specifically, one of the large, square stones at the angle (coign) of a building.

Ramp: an inclined approach to a terrace or platform, usually parallel to the sustaining wall of the latter.

Rayonnant: ("radiating"): used to distinguish the second period of French Gothic (Fourteenth Century); from the characteristic radiating or "wheel" tracery of the rose-windows. Compare "Decorated."

Refinements: a term applied to the instances in Hellenic, Byzantine, and Gothic architecture of deviations from geometrical symmetry, to secure a more flowing, rhythmic beauty. See **Asymmetries.**

Regula: one of a series of short, flat fillets placed under the **Tenia** (which see) of a Doric **Architrave,** above each of the **Triglyphs** (which see); usually having six **Guttæ** (which see) on the under side.

Reja (pr. rā-hah): Spanish term for an elaborate grille or screen of hammered and chiselled iron, characteristic of which were *repoussé* figures set into or attached to the vertical bars.

Relief: a design of ornament or figures *raised* upon a surface that forms the background; distinguished, according to the extent of projection, as **High** or **Low;** in both cases distinguished from modelling or carving "in the round" where the design is detached from the background; and from **Intaglio,** where the design is sunk below the surface.

Renaissance: the period of the fifteenth and sixteenth centuries in which the Classic culture and the Classic forms were revived in Europe.

Reredos (pr. rir'-dos): a screen behind an altar, usually of marble, decorated with sculptured ornament and figures. Called **Retablo** in Spain, where examples reach prodigious size and great elaboration.

Retablo: Spanish for **Reredos** (which see).

Retrochoir: the space, other than that of the Lady Chapel behind the altar.

Rhythm: primarily used to describe the harmonious recurrence of certain sound-relations in musical and poetic compositions; a movement of sound characterised by recurrence of stress and accent. It is based on time, but eludes the measured repetition of the bar and metre. Hence a relation of lines and masses, characterised by harmonious recurrence of stress or accent. Not a repetition of measured intervals and identical parts, but of general similarities, involving variety,

uniting in closest relationship the parts of an organic design to one another and to the whole. Rhythm is the subtlest element of artistic harmony and yet is nearest to the free growth and articulations of nature.

Rib: a projecting band or moulding on a ceiling. Specifically, the projecting members of Gothic vaulting. These were first constructed—probably with the support of a **Cerce** (which see) as light arches, which then formed the support of the intervening masonry surfaces. The Ribs which parallel the axis of the nave are called **Longitudinal**, those which cross it from column to column at right angles are called **Transverse**, while those crossing the axis diagonally are called **Diagonal**. Sometimes, especially in English Gothic, to strengthen the vault, extra ribs, known as **Tiercerons**, were inserted between the main ribs. They spring from the **Impost** (which see) and abut on an extra ridge, projecting along the axial line, known as the **Ridge-Rib**. The vaulting, thus formed by the tiercerons radiating from the Impost is called **Fan Vaulting**. Sometimes, for additional strength and to increase the decorativeness, short intermediate ribs were introduced, which are known as **Liernes**, their distinction being that they do *not* connect with the Impost. When the geometrical pattern, made by the Liernes resembles a star the vaulting is distinguished as **Stellar Vaulting**. Sometimes a vertical rib, known as a **Formeret**, was applied to the wall to separate one vault compartment from another.

Rib Vault: See **Vault**.

Ridge: the highest point or line of a roof.

Ridge Rib: See **Rib**.

Rococo: style of decoration, distinguished by rock-work, shells, scrolls, etc., which originated in France during the period of the Regency and Louis XV.

Rood-loft: a gallery over the entrance to the chancel, in which stood a cross or rood. Used for reading portions of the service and also in the performance of miracle plays.

Rose-window or Wheel-window: a circular window, whose **Mullions** (which see) converge toward the centre.

Rostral Column: a column decorated with imitations of the prows (rostra) of vessels; used by the Romans to commemorate a naval victory.

Rubble: Rubblework: masonry composed of irregularly shaped or broken stone, whether mixed or not with cement; also the fragments of stone, mixed with cement, used to fill in the thickness of a wall, between the two faces of dressed stone.

Rustication: treatment of masonry with deeply recessed joints, grooved or beveled; the surface of the stone is sometimes made rough.

Scotia: a concave moulding, frequently used in the base of Classic columns.

Screen: a partition of wood, metal, marble, or stone, separating the choir from the nave. Latin *cancellus;* hence by corruption the English term, Chancel.

Secco (lit. "dry"): as contrasted with **Fresco** (which see), "fresh or wet." Terms used in connection with **Tempera** painting (which see) according as the surface of plaster be dry or freshly spread at the time the colour is applied.

Section: a drawing showing a building or part of a building, as

it would appear if it were cut through vertically, and the part between the plane of section and the spectator's eye were removed.

Serdab: the cell within an Egyptian tomb, in which images of the deceased were placed.

Sexpartite: applied to vaults, divided into six compartments. In Romanesque churches, owing to the short intercolumniation, the bays were oblong. Hence for convenience of construction two were treated together as a square. Sometimes from the intermediate columns a transverse shafting was constructed, which together with the diagonals divided the square into six divisions.

Shaft: the main member of a Column between the Capital and (where there is one) the Base.

Soffit: the under side of an entablature, lintel, cornice, or arch.

Solar: a private upper chamber for the use of the family, in a Mediæval Castle.

Spandril or **Spandrel:** the triangular space on each side of an arch that is enclosed in a rectangle.

Sphinx: a winged monster, combining human and animal forms.

Spire: the pointed termination to a tower. See **Steeple.**

Squinch: a small arch, set diagonally across the angle of a square space to transform the latter into an octagon.

Stalls: the fixed seats in a chancel for the clergy and choir.

Stanza: Italian for Chamber.

Steeple: the combination of tower and Spire. See **Spire.**

Stele: Stela: an upright tablet of stone or marble, often sculptured and engraved; serving as a tombstone, or boundary mark or milestone, etc.

Stellar Vaulting: See **Rib.**

Stepped: See **Gable; Pyramid.**

Stilted: applied to an arch when its curve begins some distance above the impost and is connected to the latter by vertical sections of moulding.

Strap Ornament: geometrical patterns formed of bands, that suggest straps of leather kept in place with studs.

Stretcher: in masonry, a brick or stone, laid lengthwise of the course. See **Bond, Header.**

Stucco: specifically, a plaster made of gypsum, powdered marble or fine sand, mixed with water; used for wall surfaces and raised ornament; generally, any plaster or cement used for external coating.

Stylobate (lit. "column-stand"): in Classic Architecture, a continuous base supporting columns; specifically, the platform on which a Greek temple is raised. Compare **Podium.**

Tabernacle: a structure to contain the "Host" or consecrated Bread; resembling a tower or spire and elaborately embellished with windows, mouldings, pinnacles, etc., often rising to a great height—90 feet in the Cathedral of Ulm. A feature of German decorative art. Appears in Spanish Gothic under the name of **Custodia.**

Temenos: the sacred enclosure or precinct of a Greek temple or group of temples.

Tempera painting or painting in distemper: the process of painting on a ground, usually prepared with a coat of fine plaster, with pigments that are mixed with yolk of egg or some other glutinous medium and are soluble in water. The method employed for all paintings before the development of the oil medium in the fifteenth century; and continued in use by the Italian mural decorators. See **Fresco, Secco.**

Tenia or **Tænia:** the flat fillet or band, forming the upper member of a Doric **Architrave** (which see).

Terminal: applied to posts, originally used to mark boundaries. Made of marble, with a head and bust or half figure, surmounting the pedestal, it is used as a garden ornament.

Terrace: a raised level space or platform, sustained by walls or sloping banks, usually approached from below by a flight of steps or **Ramp** (which see).

Terra-cotta: a species of hard clay, moulded and baked: especially used in ornamentation.

Tessera: a cube of glass or marble used in **Mosaic** decoration (which see).

Tetrastyle: See **Portico.**

Tholos: a building of the beehive type, circular in plan, with a domed roof.

Thrust: a strain that tends to push the downward pressure toward the sides; as in the case of an arch.

Tie-Beam: in timber roof construction, the transverse beam that ties together the lower part of opposite rafters.

Tierceron-rib: See **Rib.**

Tile: a thin piece of terra-cotta, stone, or marble for the external covering of roofs.

Torus: a large convex (usually semi-circular) moulding used especially in bases of columns. See **Astragal.**

Trabeated: having a horizontal Beam or Entablature.

Tracery: the pattern of stonework that fills the upper part of a Gothic window. Distinguished as **Plate Tracery,** where the tracery looks as if it were pierced in a single plate or slab of stone; **Bar Tracery,** when composed in an arrangement of geometric designs. The German imitation of branches is known as **Branch Tracery.**

Transepts: the parts of a church or cathedral that project at right angles to the nave and choir, forming the arms of the Cross in a **Cruciform** (which see) plan.

Transom: See **Mullion.**

Transverse: at right angles to the main axis. Specifically applied to the arches and ribs of the vaulting of a nave or aisle that are in the directions of north and south. Compare **Longitudinal** and **Diagonal.**

Travertine: a hard limestone found in Tivoli.

Trefoil: See **Foil.**

Triclinium: dining room of a Roman house.

Triforium: the arcaded passage above the arches of the nave of a Gothic cathedral, opening into the space between the vaulting and roof of the aisle.

Truncated: finishing abruptly instead of in a point. See **Pyramid.**

Tufa: a volcanic substance of which the hills of Rome are largely composed.

Tumulus: a prehistoric artificial mound, serving as a sepulchral monument.

Tympanum: See **Pediment.**

Unity: a principle of Beauty, that the work of art shall present an organic oneness and completeness.

Vault: an arched covering of stone, brick or concrete over any space. **Barrel vault:** a continuous semi-circular arched covering over an oblong space, supported on the side walls. **Groined vault:** a vault formed by the intersection of two barrel vaults, at right angles to each other, supported on four corner columns or piers. **Rib vault:** a development of the groin vault, the groins being replaced by ribs or profiled bands of masonry, which are erected first, the vaulting spaces being filled in subsequently.

Vestibule: the walled space before the entrance to a Roman house; later an enclosed or partially en-

closed entrance space beneath the roof of an early Christian church; generally, the entrance space of any building, especially, if used for public assemblage.

Volute: the scroll or spiral feature occurring in a capital of the Ionic and Corinthian Orders.

Voussoir: one of the wedge-shaped stones, composing the curve of an arch.

Wainscot: the lining or panelling of an interior wall, skirting the floor and carried up to only a part of the height of the wall.

Wheel window: See **Rose-window.**

Ziggurat: (a "holy mountain"): the platform usually **Stepped** or rising in receding tiers, on which the Chaldæans erected a temple; they were also used for astronomical observations.

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